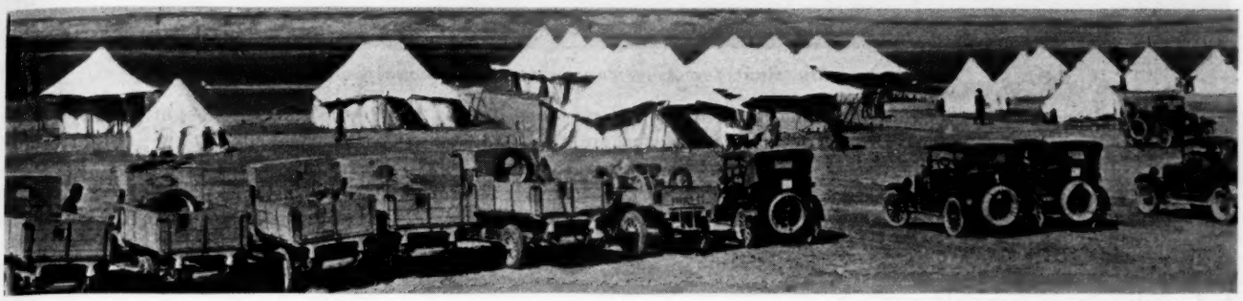
Volume 84
Number 9

IRON TRADE REVIEW

Cleveland, O.
Feb. 28, 1929



King Fuad of Egypt drives out into the Western Desert, with a fleet of American trucks and automobiles, to visit his tribesmen. Below, an American automobile crossing the Sahara

Rising Exports Will Maintain Auto Industry as Leading Steel User

Foreign Markets Certain to Expand, but Rate Depends on Extent American Interests Manufacture Abroad—Tendency for American Makers to Buy Foreign Plants

By E. C. Barringer

Associate Editor, Iron Trade Review

STEEL'S BEST customer today is the automotive industry. By taking more than one-sixth of all finished steel that was rolled in 1928, automobile and parts manufacturers ended the traditional primacy of the railroads. And because the automotive industry assembled a record number of passenger cars and trucks last year, the steel industry poured a record tonnage of ingots.

Domestic buyers, to be sure, are the bulwark of the automobile market, absorbing 88 per cent of last year's output, but a bulwark that is developing weakness. Largely because the Ford Motor Co. was inactive nearly all of 1927, domestic sales made a sharp gain in 1928, but they fell short of 1926, 1925 and 1923.

It is significant that in the year when automobile production was at its highest, domestic sales were only fourth best. Each year for a decade the proportion of passenger cars and trucks for domestic consumers has been declining, while exports—including those to Canada—have been increasing.

Ten years ago only one out of every 25 units assembled was destined for shipment abroad; last year it was one out of every nine. To put it another way and to include Canada, because Canadian plants may be considered auxiliaries to American, automobile production increased 133 per cent from 1919 to 1928, domestic sales advanced 112 per cent, while exports gained 465 per cent.

Steelmakers are looking increasingly to the automotive industry for

An assembly plant for American cars at Stockholm, Sweden

tonnage. Its specifications in 1928 enabled steelmakers to achieve their ambition for a 50,000,000-ton ingot year. So far as the present generation is concerned, a further major stride in steel production appears to be in the hands of that industry. And automobile manufacturers in turn, heedful of a steady ten-year decline in the proportion of domestic sales to total production, are looking to foreign markets for noteworthy expansion of their volume.

There are some 2,000,000,000 persons in this world. The 120,000,000 in the United States are driving 25,000,000 cars and trucks. For the remaining 1,880,000,000 persons there are only 7,000,000 motor vehicles. As living standards tend to rise and as wealth increases, it seems inevitable that the rest of the world will become motorized. Will American manufacturers do it? With American steel?

An unqualified "yes" to the first question; an affirmative with reservations to the second.

The aspect of foreign markets has been changing in the past year. Of the 7,000,000 cars on alien highways, the great bulk are American products. Either they have been exported in assembled form from the United States, or have been assembled abroad from American-made parts. In a general way, American motor vehicles abroad are 100 per cent of American steel.

But as foreign nations turn to motor transportation they desire to benefit from the wages and taxes accruing from the automotive industry. Tariff barriers greatly increase retail selling prices of American vehicles abroad. Expanding demand in foreign lands naturally seeks expression in a domestic industry.

So, in the past year, the two most important American producers of automobiles have taken steps toward establishing self-contained manufacturing units abroad. In a broad sense every unit assembled in those foreign plants will displace one which otherwise would have been imported from the United States. On its face this shift is not heartening to the American steel industry.

* * *

WITH a full appreciation of the great importance automotive requirements are to iron and steel producers, authorities of the automotive industry and of the department of commerce at Washington have been asked to comment on the outlook. Their views are summarized as follows:

The domestic market for motor vehicles will eventually become stabilized at 4,000,000 to 5,000,000 units. Since domestic sales in 1928 totaled 3,850,840 and the record is 3,995,714 in 1926, steelmakers can plan for a moderate increase in steel needs for the domestic market.

The American automotive industry has acquired such a long lead in the technique of mass production and in prestige that its pre-eminence in all markets would seem assured.

As motorization of foreign countries gains momentum, the trend will be toward production in those countries. American manufacturers evidence a tendency toward buying foreign competitors, at one stroke obtaining a going concern and eliminating competition.

Manufacturing abroad, however, will be restricted to those countries possessing a steel industry. At present only nine nations are in this category.

Markets in nations lacking a steel industry, and hence also an automobile industry, will be supplied from the nearest source of production. To a good share of the world falling into this classification, especially South America and the Orient, the

Auto Industry Becomes Largest Steel User

Percentage of Finished Rolled Steel Consumed by Leading Industries, from Iron Trade Review Analysis:

Year	Automobiles	Railroads	Building
1928	17.76	17.02	15.22
1927	13.34	20.37	14.89
1926	15.09	22.81	13.10
1925	14.60	22.26	15.26
1924	11.37	27.54	14.44
1923	10.59	31.02	13.53
1922	10.59	24.96	11.83
1921	9.82	17.16	14.23

Car and Truck Exports Gaining Steadily

	UNITED STATES							CANADA				
	Total Prod. of Pass. Cars and Trucks	For Domestic Market	Per Cent of Total	Exports of Pass. Cars and Trucks	Per Cent of Total	Value of Exports of Pass. Cars and Trucks	Value of Exports of Engines and Parts	Total Prod. of Pass. Cars and Trucks	For Domestic Market	Per Cent of Total	Exports of Pass. Cars and Trucks	Per Cent of Total
*1913....	485,000	458,603	....	26,889	....	$26,031,000	$8,900,000	.....	.....	....	5,997	....
1919....	1,886,181	1,803,451	95.6	82,730	4.4	109,126,000	47,300,000	87,835	64,886	73.9	22,949	26.1
1920....	2,111,053	1,939,409	91.9	171,644	8.1	212,032,000	91,230,000	94,144	71,132	75.6	23,012	24.4
1921....	1,595,304	1,556,874	97.6	38,430	2.4	42,869,000	40,880,000	66,246	55,520	83.8	10,726	16.2
1922....	2,544,176	2,465,942	96.9	78,234	3.1	59,320,000	43,431,000	101,007	63,149	62.5	37,958	37.5
1923....	4,034,012	3,882,118	96.2	151,894	3.8	106,009,000	64,317,000	147,202	77,282	52.5	69,920	47.5
1924....	3,602,540	3,423,808	95.0	178,732	5.0	131,635,000	77,949,000	132,580	75,825	57.3	56,655	42.7
1925....	4,265,830	3,962,899	92.9	302,931	7.1	222,589,000	95,601,000	161,970	87,819	54.1	74,151	45.9
1926....	4,301,134	3,995,714	92.89	305,420	7.11	223,569,000	96,454,000	204,727	130,403	63.6	74,324	36.4
1927....	3,401,326	3,017,127	88.7	384,199	11.3	277,876,000	110,231,000	179,054	121,640	67.9	57,414	32.1
1928....	4,357,384	3,850,274	88.4	507,110	11.6	354,895,862	145,061,625	242,382	155,069	67.2	79,388	32.8

*United States and Canadian Statistics for 1913 not separated.

Exports of Passenger Cars and Trucks From United States

(Including Chassis, but not Canadian Exports on Foreign Assemblies of American Cars)

	1924	1925	1926	1927	1928	Value of 1928
Australia	42,522	55,904	64,110	65,361	55,657	$31,834,029
Canada	10,395	15,765	28,433	38,553	49,206	41,966,248
Argentina	12,827	32,370	28,027	44,799	55,505	38,518,247
British South Africa	8,457	14,091	17,539	23,504	26,320	18,289,812
Belgium	1,604	7,462	8,468	17,801	25,150	18,191,548
Brazil	7,062	18,689	22,589	25,129	47,017	21,358,747
Germany	2,347	3,623	3,220	8,281	15,365	12,211,429
Spain	5,618	7,758	7,283	10,718	14,009	11,477,529
United Kingdom	6,821	21,889	10,721	16,660	18,149	16,236,555
Denmark	751	11,290	13,421	22,410	13,319	7,476,067
Mexico	10,082	16,146	12,012	7,771	16,115	10,530,926
Japan	4,147	1,095	1,642	2,715	10,443	7,725,601
China	1,584	2,212	3,240	2,969	2,695	1,997,860
British India	2,584	3,790	3,986	5,444	12,299	8,358,032

United States has at least an even break geographically.

Motorization connotes a rising standard of living, which in turn will result in higher wages. Foreign labor at present is almost as adaptable and certainly cheaper than American labor, but time will close this gap.

The American steel industry can thus look forward to a moderate expansion in steel requirements for domestic vehicles, to further increases in requirements for parts for export for at least a decade, and to an unstated though seemingly large tonnage for an indefinite period for entire assemblies for favorable foreign markets.

* * *

SAYS George F. Bauer, manager, foreign trade department of the national automobile chamber of commerce, New York:

"Construction of branch plants abroad does not now appear a great menace to our export trade. As now conducted, the majority of these branches receive knock-down automobiles or parts from the United States and simply assemble them. These branches have the effect of increasing our export trade, since it is less expensive to ship parts than assembled units and the duty is less.

"There may be a tendency on the part of American manufacturers to acquire or build manufacturing facilities abroad. Consuming foreign steel, this tonnage would supplant American steel. Any losses in this direction should be more than neutralized by our rapidly-increasing sales to non-producing countries.

"There are 107 nations in the world but in only nine are materials available for the production of motor vehicles on an economic basis. These are the United States, Canada, England, France, Germany, Italy, Belgium, Austria and Czecho-Slovakia. The United States and Canada enjoy 85 per cent of the world's export business in motor vehicles; the remaining seven nations only 15 per cent.

"The world's registration of motor vehicles in 1928 was 31,725,000, of which the United States accounted for 24,750,000. American manufacturers have a huge domestic demand on which to base their activities. They are enabled constantly to spend large amounts for improvements that reduce the cost of production and increase the efficiency of their products. Foreign competitors are in no such happy position.

Export Sales Important

"How important exports are to the industry may be gaged from the fact that in 1928 they were the equal of sales in 21 states. A committee of commerce is now at work reducing transportation costs. If automobiles can be loaded in ships' holds uncrated there is a direct saving of $65 per unit and the elimination of a duty on the box at destination. Steamship companies sense the importance of the trade and are co-operating."

* * *

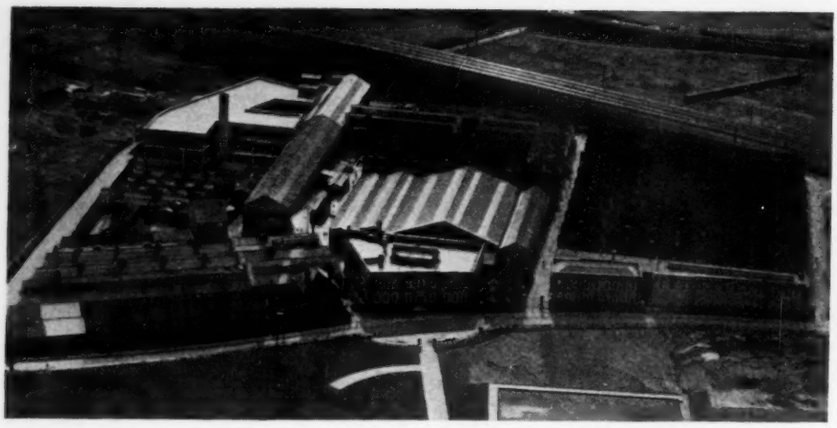
IMPORTANT automotive authorities view the availability of materials as the deciding factor between the establishment of American manufacturing and American assembly plants abroad. An American manufacturing setup can be reproduced, and foreign labor in the main is good. But unless iron, steel and other metals are available at a competitive cost, automobiles rather than raw material will be imported. It may well be that the prospect of attracting automobile production will spur the establishment of an iron and steel industry in those countries possessing unworked bodies of iron ore.

The General Motors Corp. is now purchasing steel abroad in quantity only for its Vauxhall Motors Ltd., in England. Last year the General Motors Export Co. sold 290,566 units, valued at $264,995,550, abroad. This compares with 193,830 units valued at $171,991,251 in 1927. One-third of these units was sold in Europe, and it is only in Europe that the upbuilding of a large automobile industry may be seriously considered at this time. Some automobile leaders are convinced that the ultimate development will be the acquisition of European plants by American manufacturers.

Bearing in mind that, for all practical purposes, General Motors is now manufacturing only at one plant in England and is assembling American-made parts at other points, the scope of the foreign markets cultivated by this interest is emphasized. The foreign setup of General Motors follows:

Location of Plant:
England
  Supplies England, Scotland, Wales, Ireland
Germany
  Supplies Germany, Austria, Hungary, Czecho-Slovakia
Copenhagen
  Supplies Denmark, Norway, Esthonia, Iceland, Latvia, Lithuania
Antwerp
  Supplies Belgium, Holland, Switzerland
Paris
  Supplies France, Algeria, Tunisia, Morocco
Madrid
  Supplies Spain, Portugal, Gibraltar, Canary Islands

Body plant for American motor cars finished in Japan



Vauxhall Motor Works of the General Motors Corp., situated near London

Alexandria
  Supplies Near East, Balkans, Italy
Stockholm
  Supplies Sweden, Finland
Warsaw
  Supplies Poland, Danzig
Buenos Aires
  Supplies Argentina, Paraguay
Sao Paulo
  Supplies Brazil
Montevidio
  Supplies Uruguay
Port Elizabeth
  Supplies South Africa
Australia (5 plants)
  Supplies Australia
New Zealand
  Supplies New Zealand
Java
  Supplies Java, Malay States
Japan
  Supplies Japan
India
  Supplies India

These branches of General Motors service 90 per cent of the world. The remaining 10 per cent, including Mexico and the Caribbean and West Africa countries, are supplied by direct exports of completed cars from the United States.

* * *

THE policy of the Ford Motor Co. is toward manufacturing in Europe and assembling in South America, states an official of that company. The logical conclusion is that Fords rolling on European highways ultimately will be constructed almost wholly from European steel. At present the Ford company abroad manufactures major car and truck parts only at Manchester, England, but at Dagenham, England, 11 miles from London, it is erecting a plant on a 300-acre site which will produce 40,000 cars in 1929. It is reported that eventually Dagenham will be as self-contained for steel as Fordson.

Until the change in models in 1927 the Ford company was exporting about 10 per cent of its production at Fordson and Highland Park. It is now assembling units at Antwerp, Asnieres, Barcelona, Berlin, Buenos Aires, Copenhagen, Manchester, Mexico City, Rio de Janeiro, Santiago, Sao Paulo and Yokohama. This lists only the more important assembling plants and omits many service branches.

Studebaker, Willys-Overland, Chrysler, Durant and Nash are among the American manufacturers now assembling abroad from American-made parts. In line with the belief that the purchase of existing plants abroad presents the ultimate development of American dominance in foreign markets are rumors from time to time that General Motors is buying into the Citroen company in France, into Opel and Brennabor in Germany, and into Fiat in Italy. These rumors have not been confirmed.

Manufacture abroad by American capital, resulting in a flow of dividends to American stockholders, may overcome the handicap of high horsepower taxes levied by foreign governments. In Great Britain the new Model A Ford is rated at 15 horsepower and is subject to an annual tax of $73. The annual drivers' license costs $1.20 additional. In France the automobile tax is $31.50 for 10-horsepower cars and $73 for 20-horsepower cars, plus municipal taxes ranging from 17 to 25 per cent. Gasoline now costs 35 cents a gallon in France and 24 cents in England.

"It is reasonable to anticipate a continuation of the steady rapid growth of the aggregate foreign automotive market; it will in fact probably be only a few years before that market will compare with the domestic market in importance," states the National Bank of Commerce in New York.

"The American industry has pioneered in developing cars of high performance at low prices, and that underlying principle is even more cogent to the motorization of the rest of the world than it has been within the United States. Competition from abroad, particularly within European markets, will certainly grow in power, but there can be little question that the American industry has already secured first place in future expansion."

Why Foreign Purchasers Prefer Cars That Are "100 Per Cent American"

IN SEVERAL important countries more than 90 per cent of the cars in use are of American make. American makes account for 73 per cent of all the cars in use, excluding the United States and six car-producing countries of Europe. Fifteen per cent of all the cars in the six car-producing countries referred to are of American make.

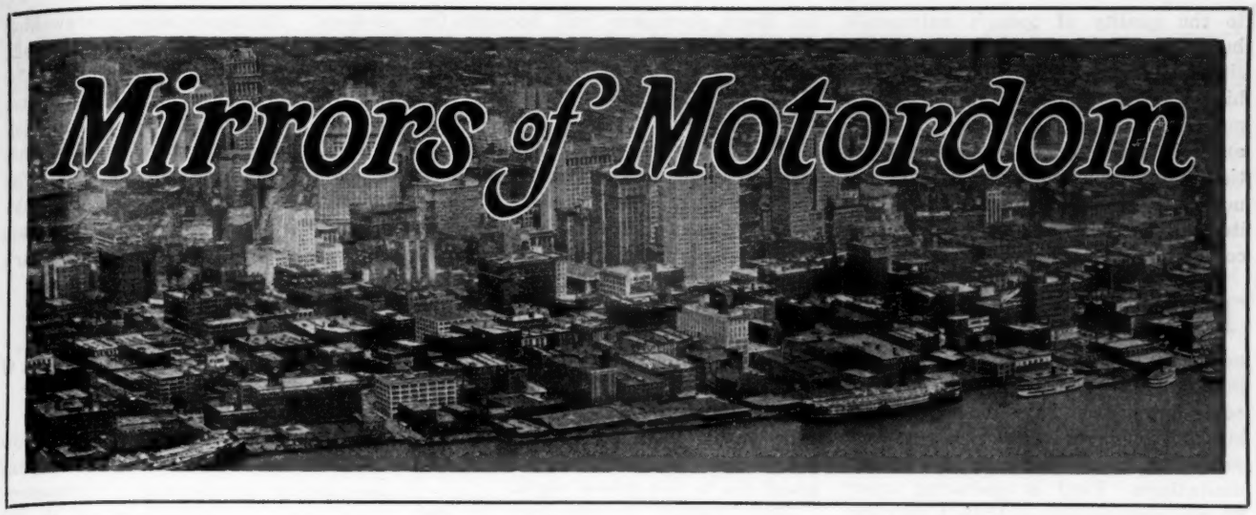
Paris may set the style for clothes, but America sets the style and leads the world in motorcar design, reliability, and worth.

The purchasers of American cars want them 100 per cent American, just as the Americans who bought foreign cars 25 years ago wanted the genuine article. There have been attempts on the part of motorcar manufacturers of various countries to establish branch plants and produce their cars in other countries, but seldom, if ever, has the product of the country of adoption stood as high or been as favorably accepted as the original product manufactured in its native country.

Assembly operations in foreign countries have no doubt facilitated in the marketing of low and medium-price cars. Such cars, the parts of which are produced in America, are accepted as an American product.

Transferring our unparalleled experience in making a trouble-free car to some other country will not improve our chances of holding and increasing our world markets, nor will it promote the prosperity of the United States.

It is reasonable to assume that the time is not far distant when the motorcars in use outside the United States will exceed the number in the United States at present, and when that time arrives the number of cars required annually to replace those which are worn or dropped will represent an enormous backlog of demand. And it is not reasonable to suppose that the United States manufacturer will voluntarily relinquish his hold upon these permanent and expanding markets, and transfer any great amount of business from his own parent country to a producing unit in any other country.—H. O. SMITH, *former chief, automotive division, department of commerce, Washington.*



Detroit Realizing Ambition for a Steel Industry

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Auto Output High Despite Slump of Some Leaders

Detroit, Feb. 26

DETROIT'S ambitions for a steel industry commensurate with its automotive industry seem on the high road to realization.

Within a year the Great Lakes Steel Corp., details of whose organization are given elsewhere in this issue, should be well along with its program, which includes open hearth steel furnaces, semifinished capacity and strip, hoop, band, shape and light plate mills at Ecorse, 8 miles south of Detroit.

Ground is to be broken in a fortnight near Monroe, Mich., 30 miles south of Detroit, for the new sheet mills of the Newton Steel Co., of Youngstown, O.

At present the Ford Motor Co. is the only steel producer in the Detroit district. Including three new units recently completed, it has 10 open hearth furnaces to supply its semifinished and bar mills.

Finishing capacity at this time embraces the full-finished sheet mills of the Michigan Steel Corp., whose officials are identified with the new Great Lakes Steel Corp. venture, and the cold strip mills of the Detroit Steel Corp.

It is noteworthy that the most ambitious of these projects stops short of the blast furnace stage, while the Newton mills begin with sheet bars. Neither the two Hanna stacks nor the two Ford stacks, which comprise the blast furnace plant of this district, have any surplus iron in times of normal activity. The Hanna stacks can no more than meet the requirements of Michigan foundries for merchant iron, while a third Ford stack is a possibility in the near future for the company's own open hearths and cupolas.

Both the Great Lakes and the Newton projects are on the Detroit river, down which passes the Great Lakes iron ore armada. In fact, almost across the river from the Great Lakes site are the unfinished ore docks and twin stacks of the United States Steel Corp.'s Ojibway plant.

For the present, it is understood, the Newton mill's appetite for sheet bars will be appeased by water shipments from Lake Erie ports. It may be that the Great Lakes' open hearths will tap the vast supply of steel scrap available in the district. If, in the distant future, some process for direct reduction of iron ore becomes commercially practicable, there will be no costly blast furnace plant to discourage its adoption.

* * *

ALTHOUGH automobile production is not quite measuring up to the extreme optimism of some steelmakers, undoubtedly a first quarter record is being set. January and February have run up monthly records and March will open with the advantage of this momentum.

Buick and Chrysler, the two makers who changed body lines most radically for this season, are the disappointments. Hupp is developing a slight drag. Oldsmobile, Oakland-Pontiac, Chevrolet, Hudson-Essex, Packard, Cadillac-La Salle and Willys-Overland have their throttles wide open. Dodge is coming back rapidly and Graham-Paige is holding its own.

Ford, at 7000 to 7500 daily, is the pace-maker and in no danger. Chevrolet's schedule for February has suffered several curtailments, for one reason on account of trouble with fender dies. Pressure upon steelmakers for supplies reaches its zenith in Chevrolet's insistence for sheets. Mills receiving Chevrolet specifications have weekly schedules, and if car numbers for the week are not given the Chevrolet purchasing department by Tuesday there is trouble.

* * *

AS THE Ford organization in the past six months has tended to farm out the manufacture of parts, especially replacements for Model T, the scope of the Ford purchasing department has been broadened.

Bidders for Ford work have been asked to submit material prices quoted to them, and in many cases the Ford organization is doing the buying. For many parts makers their remuneration is strictly a conversion charge.

Now, it is understood, the Ford company will purchase the sheets and material for bodies other than that, such as lumber, which the Ford company itself produces. At present the Briggs, Murray and Budd interests are making Ford bodies, the former in the old Highland Park plant of Ford.

* * *

NOTWITHSTANDING the great pressure for delivery of steel, inspection by automotive buyers has not been relaxed. This is a tribute

to the quality of today's automobile but a hardship upon steelmakers, considering the resistance of buyers to higher prices. Samples are etched for porosity, hair cracks cause complaints, and mill guide marks require explanation. Rejections of most makers are no higher than a year ago, but the item of service is steadily becoming costlier.

* * *

THUS far there seems to be room for both Ford Model A and the new Chevrolet six. On the retail firing line the battle waxes hot and some casualties have been suffered, but at the plants of these competitors production is checked only by physical limitations. Ford is operating about 20 per cent stronger than Chevrolet, which in turn reports retail sales about 20 per cent above last February.

Ford's recent price advances—$39 in the case of the 4-door sedan—are notice to Chevrolet that Model A has carved out a niche for itself and is to be put more on a remunerative basis.

There is a steadily growing body of opinion that in view of the general trend toward smaller cars by a large percentage of automobile owners, there is ample room for both Ford and Chevrolet. For another six months it is believed both makers can sell about all the cars they can produce, and of the 1929 automobile total these producers will account for 50 to 60 per cent.

* * *

WITH sixty days of the new year past, the leaders of the 1929 field are stepping out in front. Ford and Chevrolet, of course, are accorded the lead by a wide margin. Whippet seems destined for a good year, though perhaps falling short of 1928. Pontiac and Oldsmobile are headed for a record year, apparently, and when Oldsmobile is paired up shortly with its companion Viking eight, it promises to be one of the strongest General Motors units. The new V-type power plant of the Viking will be General Motors' response to demand for a low-priced eight.

Hudson-Essex is appraised as one of the big successes of 1929. Nash has made heavy inroads on Buick, which continues handicapped by rumors that the silver anniversary type of body is a one-year affair only. Packard is assured another record year provided the stock market does not break too badly; it is said that more Packards than all other makes put together have been purchased with stock market profits.

Graham-Paige comes into the real test this year, with relatively greater strides made last year in export than in domestic business. Studebaker is on a level plane. Auburn has had its prestige enhanced by the rush of some competitors to adopt its design of hood. Marmon's sales are swelling as it appeals to a lower-price field. Production of Dodge cars, largely for dealers, will be heavier in March than in February, with the real testing following. None of the Chrysler lines is doing anything spectacular, Plymouth suffering from Ford-Chevrolet competition. Chrysler and Hupp are not rated too strongly for this year's race.

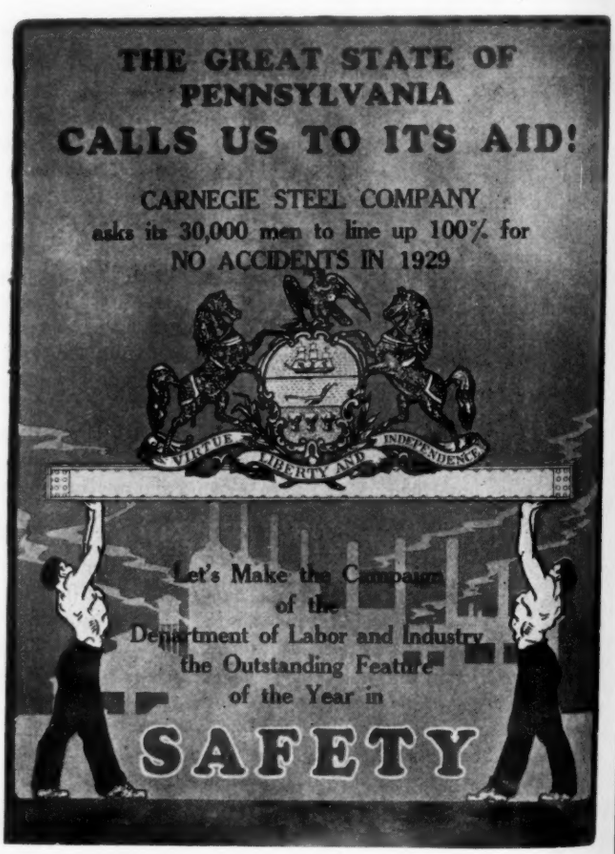
German Ironmasters To Meet at Dusseldorf

The annual general meeting of the Verein deutscher Eisenhuttenleute, the association of German ironmasters, which was postponed owing to the labor conflict in the Rhenish-Westphalian iron industry, will be held at Dusseldorf May 4 and 5. The meeting will be opened with two group conferences, the first of which will discuss metallurgical questions, while the second will be devoted to questions relating to further stages of manufacture. After a full sitting in the afternoon there will be a social meeting in the evening. The general meeting proper will be held Sunday, May 5. In addition to business questions the agenda will include a paper by Prof. Dr. V. M. Goldschmidt, Oslo, on "The Natural History of the Iron Family" and an address by general director Dr. A. Vogler of Dortmund.

Steel Industry Upholds the State in Great Safety Campaign

THE state of Pennsylvania through its department of labor and industry is conducting an important campaign, which it plans to carry on through the year. All industries have been enlisted. Appeals are made to every workman and official through pledge cards, buttons and diplomas, that are awarded as soon as pledge cards are signed by all the men in a plant or department of a plant. Thousands of these have been issued.

Some of the larger plants have designed special posters. One of the most striking has been issued by the Carnegie Steel Co. The poster is an appeal to Carnegie employes, announcing that the state has called on the industry, and asking all to aid in the campaign. It is 18 x 24 inches. In the center is the state coat of arms in black on a yellow background. The coat of arms rests on a steel beam, supported by two muscular workmen, symbolizing the steel industry supporting the state. The poster is the conception of W. H. French, of the company's general safety committee.


THE GREAT STATE OF PENNSYLVANIA
CALLS US TO ITS AID!
CARNEGIE STEEL COMPANY
asks its 30,000 men to line up 100% for
NO ACCIDENTS IN 1929
VIRTUE LIBERTY AND INDEPENDENCE
Let's Make the Campaign of the Department of Labor and Industry the Outstanding Feature of the Year in
SAFETY

Research Offers Guide To Control of Chromium Plating

Two-Year Investigation Shows Effects of Bath Composition, Nature of Anodes and Plating Conditions on Deposit, Anode Behavior and Bath

DURING 1927 and 1928 an extensive program of original research in chromium plating was conducted by the department of engineering research of the University of Michigan. The conclusions drawn from this experimental work, which was financed by the Detroit Edison Co., are presented in a bulletin, entitled, "A Study of Chromium Plating," by Richard Schneidwind, assistant investigator of the department.

Following a brief nontechnical account of chromium plating, in which current practice is described, the author outlines the procedure followed in the investigation. Problems in the electrodeposition of chromium from chromic-acid baths were studied to determine the effects of bath composition, nature of anodes, and plating conditions on

(a) Cathode deposit.
(b) Anode behavior.
(c) Ultimate "equilibrium" bath composition.

In addition, some miscellaneous studies dealing with control methods and with certain properties of electrodeposited chromium were made.

Effect on Deposit

The work led to the following general conclusions regarding factors affecting the nature of the cathode deposit:

1. Of the two essential components of a chromic-acid plating bath, namely, chromic acid and sulphate ion, the concentration of the former may be varied over a wide range, but the concentration of the latter must be kept within very narrow limits.

2. The relative sulphate concentration expressed as the ratio by weight of hexavalent chromium to sulphate ion,

$$\frac{Cr^{VI}}{SO_4}$$

must be maintained between 40 and 60.

3. For most favorable results, even with the previously specified

$$\frac{Cr^{VI}}{SO_4}$$

ratio, the chromium-acid concentration should not be allowed to drop below 150 grams per liter. From the standpoint of throwing power and the extent of the bright-plating range, a concentration of about 350 grams per liter of chromic acid is somewhat advantageous. When other factors are considered, 250 grams per liter has been found commercially practicable. At 600 grams per liter a very narrow plating range results.

4. Trivalent chromium and iron in the amounts studied in the investigation, do not markedly affect the yield of chromium obtained at a given current density. Their presence, however, greatly contract the range of current densities at which bright deposits can be obtained. It is believed that trivalent chromium has a much greater effect in this direction than has iron.

5. A low plating temperature, 15 degrees Cent. or less, has a tendency, especially in the case of thin plates, to favor the deposition of a brown slime together with the metal. It is very difficult to obtain bright, shiny deposits at 15 degrees Cent. from a solution which functions normally at temperatures which register above 25 degrees Cent.

Density Affects Matte

6. Too low or too high a cathode current density at a given temperature will result in milky or gray matte deposits respectively. For a given bath such a combination of cathode current density and temperature which results in a cathode current efficiency of 13 per cent gives the best deposits. For example, a solution containing 250 grams per liter of chromic acid and 2.6 grams per liter of sulphate, at 45 degrees Cent. (113 degrees Fahr.) a current density of 10 amperes per square decimeter (93 amperes per square foot) will produce good deposits. At any temperature, the current efficiency is a function of the logarithm of the current density.

7. The nature of the anode has no direct effect upon the cathode deposit.

Chromium—Hard, Smooth

TWO characteristics distinguish chromium from other metals—its hardness and its smoothness. The following table of scratch hardness is given by Payne in United States patent No. 1600961 (1926):

Chromium	2,000
Case hardened steel	1,950
Steel shafting	750
Cobalt	625
Swedish iron	408
Bronze	244
Babbitt	208
Copper	78

This hardness has led to the application of thick layers of chromium to wrist pins, steering knuckles, brake parts, stamping dies, extrusion dies, roller faces, etc.

As for the smoothness of chromium, its coefficient of friction is extremely low—so low that greaseless bearings have been made in which the sliding surfaces carry a fairly heavy coating of the metal.

However, chromium has gained favor chiefly through its use for protective and decorative coatings on radiator shells, headlamps, household appliances, etc. The accompanying conclusions derived from original research will be of interest to all who employ chromium in any capacity. The complete report is contained in Engineering Research Bulletin No. 10, *obtainable for* $1 *from the director, Department of Engineering Research, University of Michigan, Ann Arbor, Mich.*

It may affect the composition of the bath which in turn can alter the characteristics of the deposit.

The investigation on the factors affecting the anode behavior yielded the following conclusions:

1. A high sulphate concentration in the bath is conducive to a high rate of anode corrosion.

2. The most important determining factor in anode corrosion is the inherent chemical character of the anode material. It has been found by other investigators that iron or steel must be free from alloys such as nickel or chromium in order to be most resistant to corrosion as anodes.

3. Anodes tend to dissolve or corrode more rapidly at high temperatures than at low.

4. In the case of iron and steel anodes, very low anode current densities, below 2.0 amperes per square decimeter (18 amperes per square foot) tend to increase the rate of corrosion markedly.

Studies of the factors affecting the equilibrium bath composition led to the forming of conclusions as follows:

1. With fixed solution composition, anodes, and plating conditions, such as current density and temperature, the trivalent chromium concentration of a chromic-acid plating bath will reach equilibrium. Naturally, in order to maintain every other factor constant, chromic acid and water must be added to the bath from time to time in order to replace the metal deposited out and the portion of the bath lost as spray or gas.

2. A high sulphate concentration of the bath favors a high equilibrium concentration of trivalent chromium.

3. The inherent nature of the anode material has probably a greater effect than has any other factor upon the magnitude of the equilibrium trivalent chromium concentration. This magnitude in turn is dependent upon the magnitude of the oxygen overvoltage of that metal or of its oxide. For example, anodes of lead, platinum, and iron are efficient in that order in keeping down the trivalent chromium concentration.

4. A high temperature favors a higher equilibrium trivalent chromium concentration, other things being equal.

5. A low anode current density, especially in the case of iron or steel anodes, causes a low equilibrium trivalent chromium concentration.

6. The equilibrium concentration of trivalent chromium is markedly higher in a bath in which electrolysis is very frequently interrupted than is one electrolyzed continuously.

Miscellaneous findings were as follows:

1. Sulphate analyses are best carried out in acetate solutions rather than in chloride solutions.

2. Iron cannot be satisfactorily removed from chromic-acid baths by any method known at the present time.

3. Lead chromate can readily be removed from lead anodes by means of a saturated solution of sodium chloride acidulated with hydrochloric acid.

4. Heavy chromium deposits show the presence of voids and cracks.

Plan New Steelworks for South Africa

By Vincent Delport

European Manager, Iron Trade Review

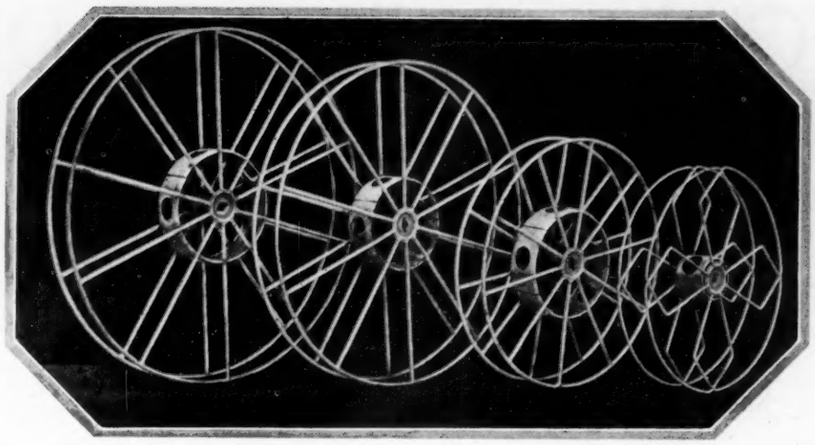
INTERESTING developments are taking place in the iron and steel industry of South Africa, following the bill passed by the Union government March 30, 1928. This bill, known as the iron and steel bill, provides for state control of the iron and steel industry of the country, with its center at Pretoria. A corporation has been created, under the name of Union Iron and Steel Industrial Corp., with an authorized capital of £3,500,000 ($17,000,000). However, Dr. Van der Byl, chairman of the board of directors, now in Europe to collect data relating to the construction of the plants, stated before leaving South Africa that there is no intention at present of issuing such a large amount of capital.

Shortly after the passage of the bill the minister of mines stated that, under the bill, the government will become permanently and directly interested in iron and steel production. The government guarantees debentures and takes up 500,000 shares of £1 on which the dividend cannot exceed 6 per cent. Later on the bulk of the share capital, up to £3,000,000, may be offered to the public without government guarantee, and with a maximum dividend of 12.5 per cent.

The bill was passed after an inquiry had been made, and the scheme was based on a report prepared by an expert committee whose members included engineers of the Gutehoffnungshutte of Germany. The report was signed by Dr. Lilge, an official of the German company. Dr. Lilge is reported to have planned for extensive works including a coking plant, blast furnaces, steelworks and rolling mills. The plans provide for a minimum output of 150,000 tons of pig iron, 150,000 tons of steel and 132,000 tons of rolled products. Owing to the fact that the report was prepared by a German iron and steel and engineering firm, it has been assumed that Germany would obtain the greater part of the contract for erecting the plant. It also has been rumored that Dr. Lilge would be appointed technical manager at a salary of £7000 ($35,000) per annum, and that the Gutehoffnungshutte would act as consulting engineers. The name of the Freyn Engineering company of Chicago also has been put forward in connection with these plans.

Dr. Van der Byl has stated that nothing definite has been done up to now and that no appointment has been made, either with respect to the technical expert or the placing of the contracts, for which tenders will be invited on a fair basis to all. He further stated that it may not be deemed advisable to construct a coke-oven plant, and that it may be found desirable to buy coal and coke from outside. He said that the quantity of steel initially produced will be about 50 to 60 per cent of the average tonnage imported, which amounts to slightly less than 300,000 tons. The plant, however, will be laid out for possible extensions. In any case, no contracts will be placed for months, until the preliminary plans are decided. It has been publicly stated that, while the government will have control of the industry, the corporation will be managed by experts.

Naturally the scheme has met with considerable opposition in certain quarters and has created a good deal of adverse comment in Great Britain. British producers and manufacturers will have to meet keen competition in a market which they regarded as an imperial market, and, furthermore, they resent the possibility of the contract for the building of the works being awarded to a German firm. During the past few years iron and steel were produced mainly by the Union Steel Corp. (of South Africa), Limited. In 1927 the output of pig iron was 34,740 tons and that of steel ingots and castings 35,000 tons.



Wire is used to a large extent in making the frames for motion picture reels

135th Article

Motion Picture Reels

Large Uses of Steel in Small Ways

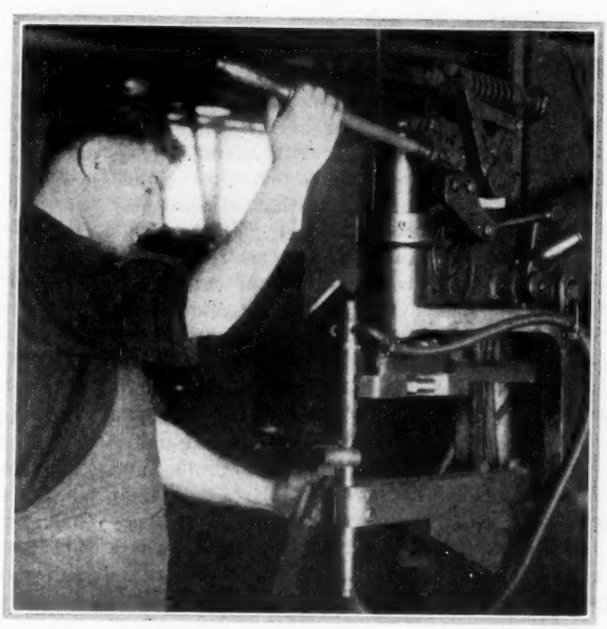
THE rapidly growing motion-picture industry has carried with it a heavy increase in the use of steel. The number of "movie" theaters in the country is approximately 20,000. The buildings have absorbed a large tonnage of structural steel. Cameras and picture projectors require considerable steel in their construction.

Films are wound on steel reels and are shipped on the reels to all parts of the country, and to nearly all foreign countries. The early type of film reel had pressed steel sides and a hub of relatively small diameter. The sides were easily bent. It was difficult to attach and detach the film.

The next step in the development was the wire spoke reel, and today this form is rapidly replacing all of the earlier types. It has been found that eight or ten spokes will hold the film in place as it is wound. This design also gives maximum accessibility for attaching and detaching the film.

The various parts of the reel are assembled and held in place by spot welding. The wire used is 3/16-inch, bright carbon steel, of quality suitable for spot welding. The usual design has ten spokes on each side. The 14-inch reel of this type uses 135 inches of wire, 15 inches of 2½-inch wide steel strip for the hub, a short piece of bar steel for the bushings and two stampings for the washer. In one of the largest plants making film reels, wire is first straightened and then cut to length for the spokes and the circular hoops. The spokes and hoops for one side of the reel are then placed in a jig mounted on a specially designed spot welding machine. The spokes are then quickly spot welded to the rim.

Next a washer is set in place and the inner ends of the spokes are all spot welded to this washer in one operation. A second jig on a second type of spot welding tool takes the strip pieces which form the hub and in one operation makes the ten welds which fasten these strips to one side of the reel. The other side of the reel is then assembled in a similar manner.



Spot welding parts for motion picture reels

The total weight of this frame in the 14-inch size is 35 ounces. However, the weight of steel required to produce the complete reel is considerably more. The washers and hub stampings have holes punched in them, and the bushing is bored to permit the reel to be slipped on to the shaft of the projecting machine. Considering all this, a leading manufacturer estimates the average size of reel as weighing 3 pounds.

Production of reels in 1928 probably exceeded 1,000,000, and required about 1500 tons of steel. Many reels, especially of smaller sizes, are made of stampings and it is estimated by one familiar with the situation that about half the 1500 tons of steel is made up of wire and the other half of strip and sheet steel. A large portion of the sheet and strip steel used for this purpose is cold rolled material. The amount of bar steel used for the bushings probably does not exceed 50 tons.

The 14 and 15-inch reels are the most popular and they hold 2000 feet of film. The reels with the films wound on them usually are shipped in tin or sheet steel boxes. Five or ten such boxes are placed in substantial steel carrying or expressing cases, so that the steel requirements in connection with the film reels and their containers more than doubles the 1500 tons called for by the construction of the reels, giving at least 3000 tons.

Alloy Chilled Rolls Offer Difficult Machining Problem

Special Rolls of 70 to 75 Scleroscope Hardness Gain Favor in Mills—New Tool Steels Cut Turning Time

By P. J. Longnecker

Superintendent, Roll Turning Department, Firth-Sterling Steel Co.

ABOUT 25 years ago the rolls used for structural shapes, rails and other large sections generally were made of sand iron; in some cases a chilling ring was used in the finishing grooves of these rolls. Steel and nickel steel rolls were used for blooming or cogging mills and for some shapes where extreme strength was needed. Rod and small merchant mills used steel rolls in their roughing stands and mild and medium-chilled iron rolls for the finishing stands. Plate and sheet mills employed mild and medium-chilled iron rolls about 55 to 65 scleroscope; cold rolls for sheet mills were chilled iron about 70 to sometimes as high as 80 scleroscope.

The tools used for turning rolls at this time were practically all straight high-carbon tool steel, and some few brands contained a small percentage of tungsten. Some of these steels made excellent finishing tools and to this day retain their standing as finishing steel, especially for chilled iron rolls.

High-Speed Steel Introduced

Several years later, came self-hardening tool steel, closely followed by high-speed steel, but about the same time came carbon alloy rolls of chromium and nickel and a few other similar alloy steel rolls. These rolls were made in several grades from soft, with 1.40 to 1.60 per cent carbon, to hard rolls, with 2.10 to 2.30 per cent carbon. The sand iron and chilled iron rolls have remained much the same for a period of about 20 years. The alloy steel rolls were much harder to cut but the average high-speed steel took care of these rolls nicely.

According to data compiled by a large rolling mill machinery builder, the cutting speeds used on lathes varies widely in different shops. What is considered good average cutting speed in one shop is considered entirely too slow or too fast in another shop. It also varies on different classes of work. Some shops consider the proper speed for cutting chilled rolls 35 to 38 inches a minute while others go as high as 70 to 80 inches a minute. The following are good average cutting speeds:

Type of rolls	Inches per minute
Sand iron or steel	300 to 336
Alloy (hard, 2.40% carbon)	55 to 60
Chilled	48 to 50

The foregoing cutting speeds are high for sand iron and steel rolls and rarely are used except in rollmakers foundry roll shops where the turners are paid piece work. The piece work system of turning rolls is used almost exclusively by the rollmakers as their work consists largely of turning necks and rough body turning, and there are few other shops where tool steel receives the same abuse.

About two years ago, rollmakers started to make iron rolls containing chromium and molybdenum, and later, some with a small percentage of nickel in addition to the other alloys. These alloys make a close grain structure and when cast in sand molds, are known as special grain rolls; when cast in heavy iron chilling rings, they are known as special alloy chilled iron rolls. They have greater depth of chill, surface wearing qualities of the old time chilled rolls and strength that almost may be compared to steel. The average hardness of these rolls is from 70 to 75 scleroscope. A few of these alloy rolls have been made for cold rolling as hard as 90 scleroscope but above 80 there is no steel that will cut them and they must be ground.

Special alloy chilled iron rolls of 70 to 75 scleroscope are replacing many of the old type of iron rolls, and in some cases, steel rolls, due to their strength and wearing qualities. They are exceptionally hard turning, having more of an abrasive action on the tools than the old type chilled iron rolls. The large number of these rolls in use today have increased the roll turning time and costs when using ordinary high-speed steel. Results obtained through the use of a recently developed high-speed steel for roll turning have proved that such a steel not only can bring roll turning costs back where they were before the introduction of alloyed iron rolls but also reduce the costs of former years.

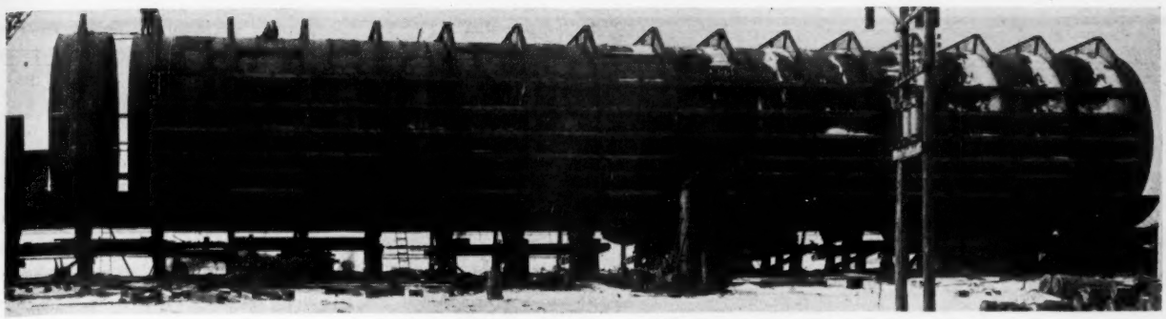
The production engineer of a large concern manufacturing rolls points out some interesting figures on comparative tool performance. Tools made from the new steel, called "circle C," keep their edge throughout the machining of five to six rolls of average size. With the ordinary high-speed tool steels formerly used, tools were ground at least once after each roll and it was found necessary at times to remove a tool and regrind it before a single roll could be finished.

After five months service, the tools made of special steel have not been reforged and their present condition indicates that they will not require forging for from one to three months more. A life of six months per forging may reasonably be expected. With the former tools, reforging was done at least once a month.

Turning Tools are Reforged

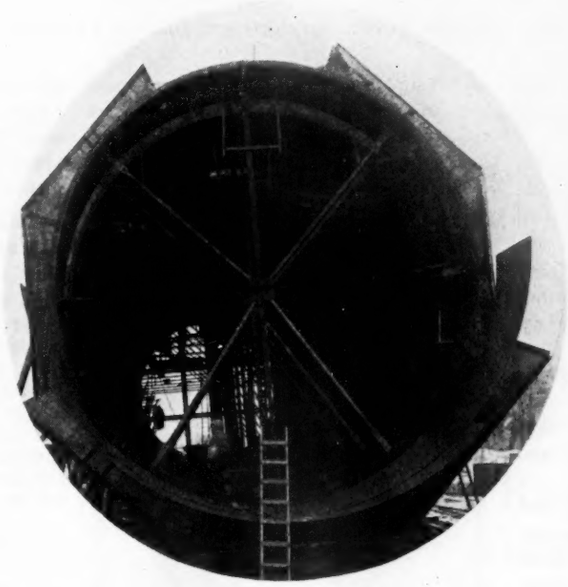
The tools used for this work are of sufficient length to allow for six reforgings before they get too short for further service. On this basis, the usual tool life with regular high-speed tool steels was seven months, whereas the special steel indicates a probable life of several years.

Owing to the fact that tools made of the special steel require much less frequent grinding and because they may be forced without appreciable harm, the lathe hands have been enabled to increase their production materially. With rolls on which a production of four per day formerly was considered good practice, the men are now producing six.



One of the ten 250-foot sections nearly ready for launching.

USE RIVETED AND WELDED STEEL PLATE TUBES FOR DETROIT VEHICLE TUNNEL



The illustration above shows how the steel plates are being assembled

AN UNUSUAL type of steel construction for tunnels features the one-mile vehicular tube now being built under the Detroit river, to connect Detroit and its Canadian neighbor, Windsor, Ont. Steel plates are being used to fabricate the tunnel sections, and they are being assembled by riveting and welding, for strength and watertightness. The steel tubes then are given a heavy coating of concrete inside and out, and laid in a trench in the bottom of the river. The inside diameter of the finished tunnel will be 28 feet, and it will have a 22-foot roadway, with 13½ foot clearance, roadway to ceiling.

First, the land sections of the tunnel proper are to be shield driven. The land shaft on the Detroit side has been completed and the shield assembled. It is claimed that this is the largest hydraulic tunneling shield ever assembled on the American continent. It is 32 feet diameter, 16 feet long, and built up of steel plates to a thickness of 2¾ inches. It weighs 350 tons and is moved ahead by 30 hydraulic jacks, each of 150 tons capacity. The tunnel, as driven, will be lined with a steel shell, inside of which will be a concrete lining approximately 2 feet thick. A rather radical departure from general methods of construction has been adopted for these sections, as the tunnel lining is to be of structural steel, instead of cast iron. The lining will require 3500 tons of steel.

A still further departure is noted in the construction of the sections, which are to be laid in a trench dug in the bottom of the river. This part of the tunnel will be 2500 feet long, and will consist of ten tube sections, each 250 feet long. The tube sections are made of ⅜-inch steel shell, approximately 31 feet in diameter. The shells are strengthened by external diaphragms every 12 feet, the diaphragms being octagonal in shape and protruding about 2 feet from the shell.

Steel plates for the tube sections are being fabricated at the Walkerville, Ont., plant of the Canadian Bridge Co., and the sections are being transported to the property of the Canadian Steel Corp. at Ojibway, Ont. Here, on launching ways, the material is being assembled, riveted in place and then welded. All longitudinal joints are butt-welded, no riveting being done on the joints. The circumferential joints, which occur at 4-foot and 8-foot intervals, are lap riveted and are then welded for watertightness. An 18-inch lining of heavily reinforced concrete is placed in the tube and the exterior is given a covering of concrete 2 feet thick. A heavy steel bulkhead is built in each end, to exclude water, and the section is towed into position over the trench, where by a slight addition to the weight, the section is sunk into place.

Connections between the sections will be made by guide lip plates and castings on the end of the tube sections, the final tie being made by pins. A welded plate connection is also made on the inside of the tube sections, for water-tightness. Three feet of concrete is then placed by the tremie method around the outside of the joints. Bulkheads will be removed and work will proceed inside the tube as new sections are being laid. Approximately 3500 tons of steel are required for these river sections, and 1000 tons of steel for interior fittings.

The T-rail was invented in 1830 by Robert L. Stevens, president and engineer of the Camden, South Amboy Railroad & Transportation Co.

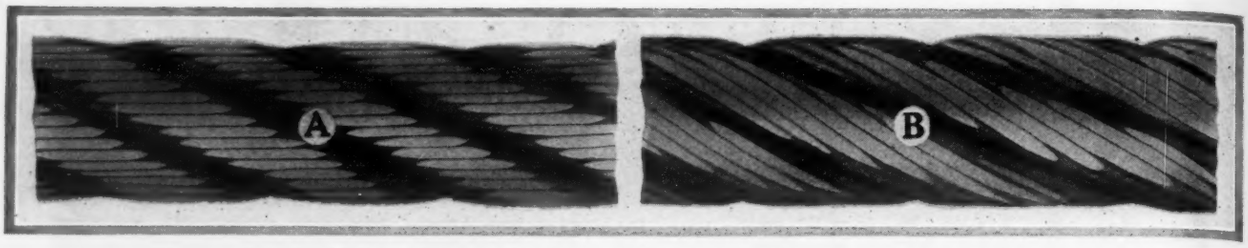


Fig. 1—(A) Partially worn regular lay wire rope. (B) Partially worn lang lay rope

Buying Wire Rope Intelligently

Knowledge of Various Constructions and Lays Is Important in Selecting Proper Rope for Job

By Oscar Hellgren

East Chicago Works, Youngstown Sheet & Tube Co.

WIRE rope is made in 42 different constructions and in six metals. There are, of course, many more than 42 different and distinct constructions, but by far the greater percentage of all wire rope service is performed by one of the 42 standard constructions. These constructions are designated by names such as "Seale," "Spacer Seale," "Warrington," "Tiller," etc., etc.

Practically all of these constructions are available in six grades of material: Iron, toughened steel, cast steel, mild plow steel, plow steel and improved plow steel.

Construction or grade of rope has no influence on its "lays." For instance, a 1¼-inch 6 x 19 Spacer Seale (which is to say: a 1¼-inch diameter rope that is made up of six strands of 19 wires each and in accordance with a construction known as "Spacer Seale") might be either "left lay lang lay," "right lay lang lay," "left lay regular lay" or "right lay regular lay."

"Lay" signifies the manner in which the individual wires and strands are *laid* into the completed rope. The rope that is most commonly used is that of "regular" lay—so called because the wires in the strands are laid in the opposite direction to that in which the strands are laid into the completed rope. This is illustrated in Fig. 2, and is commonly used in this country because when wire rope is forcibly twisted together the internal stresses find themselves working in opposition to each other—in one direction in the strands and in the opposite direction in the completed rope—with the result that the stresses do much to equalize themselves and make the rope less likely to kink, much less "cranky," and easier to handle than would be the case if both strand and completed rope stresses were pulling in one direction. Whether the rope be left lay regular lay or right lay regular lay depends entirely on whether the strands are laid into the rope clockwise or counter-clockwise.

In an effort to provide the individual wires with a greater wearing surface and gain a more flexible rope, the principle of laying the wires and the strands was reversed. That is to say, the strands were laid into the completed rope in the same direction as were the wires into the strands. This type, which is called "lang lay" rope, also is illustrated in Fig. 2.

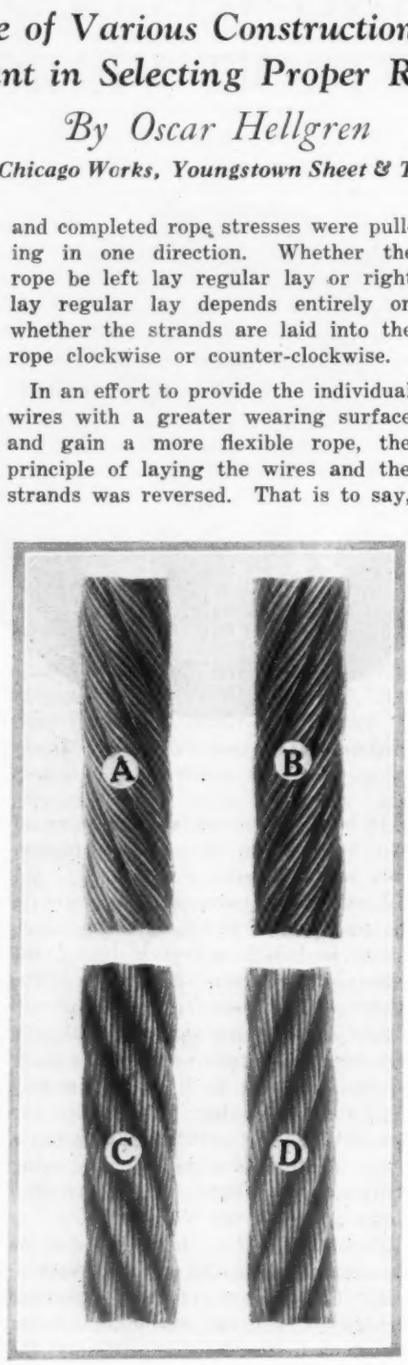


Fig. 2—A, left lay, lang lay; B, right lay, lang lay; C, left lay, regular lay; D right lay, regular lay

Lang lay rope offers several advantages over "regular lay" ropes, chief among which are:

1—Greater wearing surface, each outer wire having approximately three times the length exposed for wear; (See Fig. 1).

2—Greater flexibility, because the outer wires of the strand are parallel to the axis of the rope against the manila core and therefore, set up less frictional resistance between themselves when bending;

3—Lower bending stresses, the bending stress in a "lang lay" rope being approximately 80 per cent of that in a "regular lay" rope of the same construction and length of lay.

However, there are several disadvantages to "lang lay" over "regular lay" rope, two of which are:

1—When using "lang lay" is it essential that all auxiliary equipment, (sheaves, etc) be in the best of condition since a pinching sheave, for instance, will more readily deteriorate "lang lay" than "regular lay" rope. It will be obvious that to squeeze or pinch a "lang lay" rope—where the wires within the strands lay in the same direction as the strands within the rope—will more readily force the wires or strands to lift out of their proper place. This is called "bird-caging."

2—By reason of the unopposed internal torsional stress in "lang lay" rope it has a great tendency to kink, be "cranky" and hard to handle. In addition, it will "bird-cage" more readily than "regular lay" and because of this fact is quite unsuited to tasks where there is a need for elasticity or sudden stopping and starting. In oil well drilling, as an instance, "lang lay" rope would be unsuited to the work of drilling because of the liability of the rope to "bird-cage" due to the oft-repeated sudden jars.

As in all ropes, "right lay lang lay" or "left lay lang lay" may be determined by whether the strands are laid in the rope clockwise or counter-clockwise.

The word "tru-lay" does not signify a rope of a particular construction or grade. Rather, it indicates a method of wire rope manufacture, it being a coined word meaning "truly laid." Rope fabricated in this manner is rope in which both wires and strands are preformed before being assembled into the completed rope. This preforming process or "laying together" of the component wires and strands was designed to eliminate internal torsional stresses and to compel each wire and strang to lie flat in its assigned place.

Wire rope manufacturers repeatedly are receiving orders which read something as follows: "Please ship us 242 feet of ⅝-inch improved plow steel rope," or "Ship by express 80 feet of ⅞-inch Seale." Such orders cannot be filled until more information is secured as to the type and kind of rope required. In ordering wire rope there are nine distinct pieces of information required. These are:

1—Length of rope.

2—Diameter of rope. Before replacing an old rope it is always well to gage the sheave to ascertain whether it has been worn to an extent that will cause excessive abrasion or pinch the new rope. New sheaves are cheaper than wire rope.

3—Numerical construction—the number of strands by the number of wires in each strand. For instance: 6 x 7, 7 x 9, 6 x 19, etc.

4—Type of construction—such as "Seale," "Spacer Seale," "Guy," "Warrington," etc. If in doubt or ignorance of the exact construction, consult a qualified wire rope engineer.

5—Grade—whether plow steel, improved plow steel, etc.

6—Direction of lay—whether right or left.

7—Type of lay—whether "lang" or "regular."

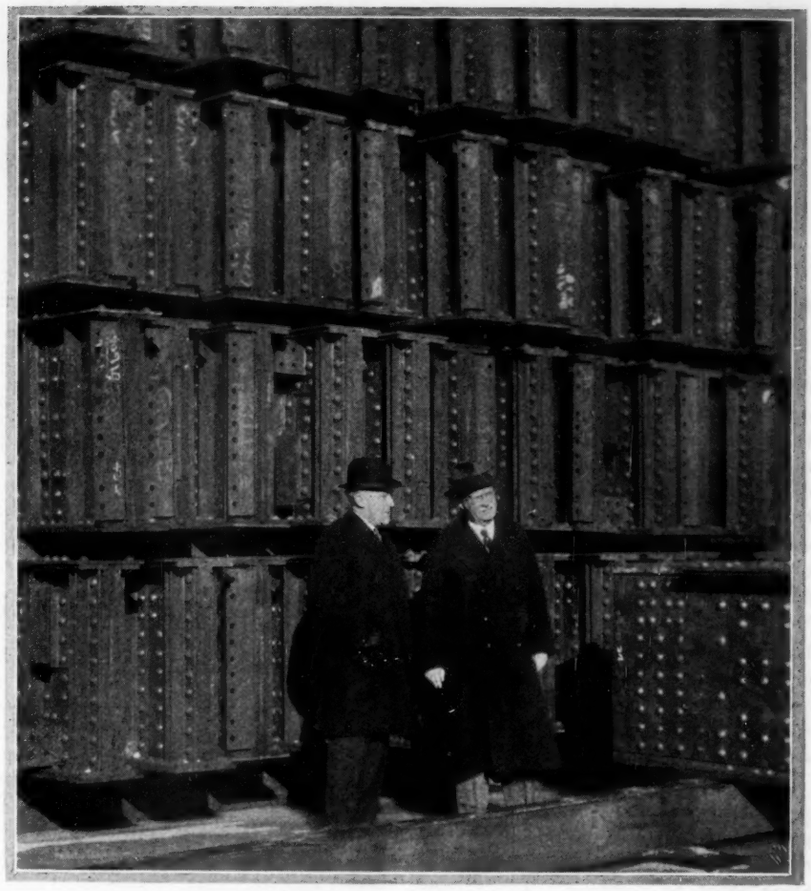
8—Type of core—whether hemp center or independent wire rope center.

9—A full description of the class of service intended for the rope.

Where more than one rope is used on a piece of equipment, specify which rope is required; as a "boom rope" or a "hoist rope" on a revolving shovel.

Where written properly the order that originally might have read: "242 feet of ⅝-inch plow steel rope," would correctly read: "242 feet, ⅝-inch—6 x 19 Warrington, plow steel, left lay, regular lay, with hemp center. This is to be used for hoist line on derrick."

If wire rope users will order rope in accordance with these specifications they will save themselves many costly delays and assure themselves a more uniformly high service average.



James Simpson, president, Marshall Field & Co., and Ernest R. Graham, architect, inspecting pile of 2700 tons of 30-foot girders for the Merchandise Mart

Merchandise Mart Requires Over 50,000 Tons of Steel

DELIVERY of 50,000 to 60,000 tons of fabricated structural steel for the Chicago Merchandise Mart will be started soon, to the site of the structure at Wells street and the Chicago river. Some of the first tier columns of the building are 71 feet 7½ inches high, and each of these columns, which extends from the base to the first floor, weighs 43 tons.

About 1900 tons of steel slabs will be required. These will be placed over the 558 reinforced caissons now completed. This is said to be the largest tonnage of steel slabs ever received for any building, according to officials of the Bethlehem Steel Co., which is furnishing the steel.

A transportation speed record was made in shipping the steel, it is stated by Magnus Gunderson, chief structural engineer for the architects of the Merchandise Mart, Graham, Anderson, Probst & White. The Bethlehem plant at Buffalo received the preliminary drawings for the building Aug. 23, 1928, and on Sept. 13 the first shipment was made. In October and November, 28,000 tons were shipped to Chicago in Great Lakes vessels. A total of 34,500 tons already has been shipped to Chicago, with 2800 tons ready for shipment. Thirty-three thousand tons now are being fabricated in the Morava works of McClintic-Marshall Co., Chicago, and it is understood other fabricators in the Chicago district will share in the work.

About $1,600,000 has been expended for the caisson and other preliminary work. The project will cost $30,000,000, and it is said the building will be the largest in the world devoted to business purposes.

Class I railroads Feb. 7 had 245,907 surplus freight cars in good repair and ready for service. This was a decrease of 32,306 cars compared with Jan. 31. Surplus coal cars the same date were 83,968, a decrease of 8275 cars within a week.

Grinding Tungsten Carbide Tools

Three Operations—Rough Grinding, Finish Grinding and Stoning or Honing—Are Recommended for New Alloys

By A. H. Prey

Engineer, The Carborundum Co.

TUNGSTEN CARBIDE cutting tools, concerning which much interest has been aroused, are distinguished by their extreme hardness. They will scratch sapphire and their hardness lies between that of aloxite (fused alumina) and carborundum (silicon carbide). It is apparent that an aluminous abrasive wheel is out of the question for this material and that the harder abrasive, silicon carbide, must be used.

Tungsten carbide material for tools is supplied to the trade at the present time in two forms. One a finished tool ready for use, and the other a roughly shaped piece to be mounted and ground by the customer.

In the first case the tool must be ground to its final form and finish ground to secure the proper sharp edge. A relatively large amount of stock must be removed. After forming there remains only the problem of regrinding which will be described later. A soft wheel of the grades P to V and grits 40 to 60 in W bond (Carborundum Co. grading) are recommended for this work.

Regrinding of a tungsten carbide tool should consist of three operations, namely, rough grind, finish grind and stoning or honing. The rough grind is to bring the tool to its proper shape and the finish grind and stoning are to give a smooth finish and a sharp edge. The makers of this material emphasize the importance of an edge free from grinding marks to its most efficient use and we believe that the combination of a finish grind on a fine grit wheel followed by a hand stoning operation with a small carborundum stone will give the proper cutting edge. It may be possible to eliminate rough grind operation where the point of the tool is not badly worn, but where considerable stock is to be removed it should be carried out.

For these operations the following gradings of carborundum products are recommended:

1. Rough grind—60 grit, *N* to *U* grades, *W* bond wheel.
2. Finish grind—100 to 120 grit, *S* to *V* grade, *W* bond wheel.
3. Stoning—Any fine grit, medium grade carborundum stone—for example—4 x 1 x ½—*2F-G6*.

Suggest Practice

DRESSING of cutting tools of carboloy, Strauss metal, dimondite, widia and other tungsten carbide materials can be performed only by grinding. In view of the widespread interest in these new alloys, IRON TRADE REVIEW *presents on this page the latest recommendations for grinding by two leading manufacturers of abrasives—Norton Co. and Carborundum Co.*

In addition to the selection of proper grinding wheels for a good cutting edge, several points in grinding should be watched. Wheel speeds should be low rather than high. From 4000 to 5000 surface feet a minute is about the correct range. The pressure of the tool against the grinding wheel should be light, otherwise excessive wheel wear will result with no faster cutting action. The customer must expect a higher wheel wear than when grinding high-speed steel. In the efficient use of the tools made from these new metals, the clearance and tool angles differ from those standard for high-speed steel and the manufacturer's specifications should be followed closely.

A rigid machine is essential, otherwise wheel wear will be excessive. The tool should be on a solid rest to prevent bumping and the wheel from getting out of true. The tool should be approached to the wheel carefully and the heel should come in contact first, otherwise the tool will dress the wheel, or at best, a ragged and chipped edged tool will result.

Some disagreement exists among the various manfacturers of tungsten carbide relating to the use of water in grinding. If water is used the supply should be plentiful as a little is worse than none. The heat conductivity of this material is low and there is danger of localized heating and checking. At the present there is some indication that different gradings will be necessary for use on materials of different makes, but this will have to be determined by test work.

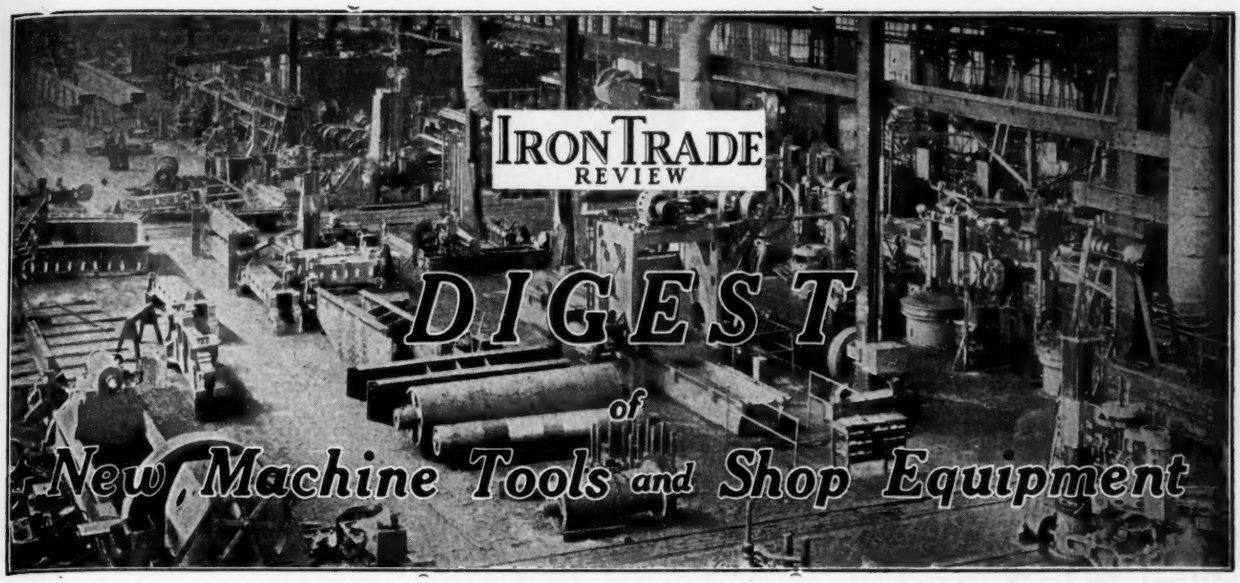
The use of this new tool material is yet in the experimental stage, consequently the grinding problems are not yet completely solved. A material having such radical characteristics compared to those of high-speed steel, must take time to be developed to its utmost efficiency and so grinding wheels must develop along with it.

Recommends Use of Soft Wheel, Fine Grain and Light Pressure

SUGGESTIONS by the Norton Co. for grinding the tungsten-carbide-cobalt cutting materials were presented in the December, 1928, issue of *Grits and Grinds*, published by the company. It was stated therein that the now common high-speed steels were found to be more difficult to grind than the older carbon steels, but the users soon realized that because the grinding intervals were less frequent, high-speed steels were more economical in the end. Likewise, the tungsten-carbide tools are more difficult to grind than is high-speed steel, but in turn they will stand up longer and do more work before regrinding is necessary.

Tests and experience have indicated that crystolon wheels in grain 60 grade I are satisfactory. This wheel cuts fairly rapidly when the hardness of the material is taken into consideration, and with the light pressure recommended the wheel wear should not be excessive. Grinding should be done dry, and only light pressure should be used. To avoid grooving the wheel it is suggested that the tool be kept moving during the grinding operation.

Coarser wheels are not desirable because of the rough finish they impart; nor should they be required inasmuch as only small amounts of material are removed. If the edge left by the 60-I wheel is not smooth enough a 90-H wheel can be used for final finishing.

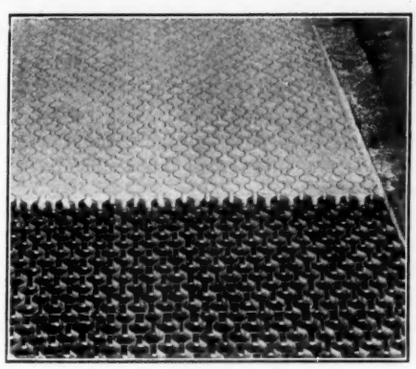


Floor Surfaces Armored with Steel Mat

No. 42

Blaw-Knox Co., Pittsburgh, has announced a new product for steel armoring the surface of concrete and asphalt floors. It is a built-up continuous steel mat that is laid down to form the surface of the floor. The pattern is scientifically designed to present such a surface to traffic that stresses will be taken care of by the steel itself, distributing loads throughout a wide area of the floor. Furthermore, the design is such that the portion of concrete appearing between the steel bars is in no way divided into separate sections, but is monolithic with the rest of the concrete forming the floor body.

The armor consists of a number of steel strips shaped into a regular pattern which, when placed together,



No. 42—Steel floor armoring

form a series of separate rectangles of proper size to meet the conditions under which a given floor must work. These steel strips are set on edge as shown in the accompanying illustration. Small, short circular tie rods are inserted in a horizontal position through holes in the middle of the strips. These tie rods act as carrying members carrying one strip to another strip, as well as tying the entire surface into one steel mat. Small steel lugs are placed between adjacent strips at points where the tie rods pass through. These lugs act as anchors to keep the steel strips in the plastic material and also as separators between the strips avoiding any possibility of rust due to contact of steel.

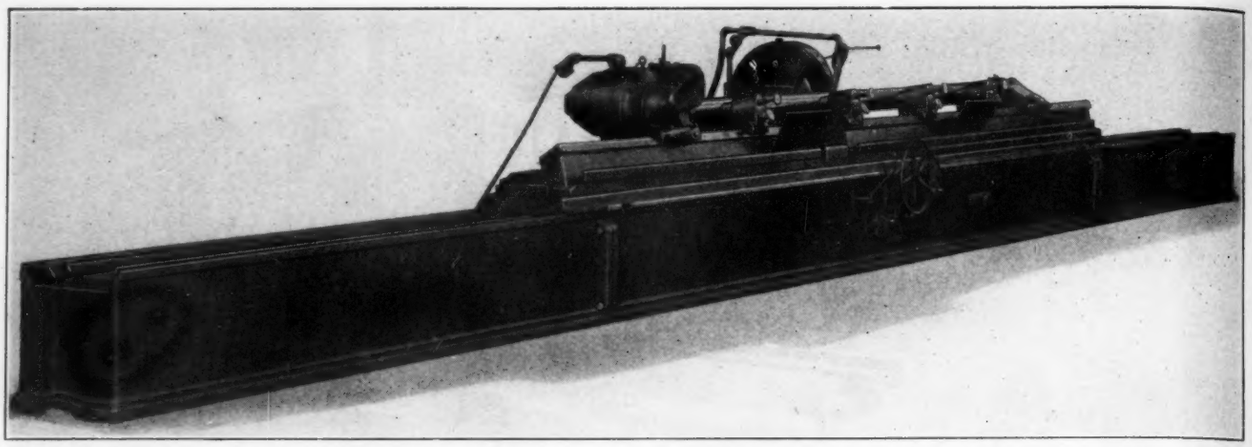
High-Strength Rod Made for Bronze Welding

No. 43

Oxweld Acetylene Co., 30 E. Forty-second street New York, has placed on the market a high strength welding rod for all bronze welding applications including the fusion welding of brass and bronze, bronze-welding of malleable and gray iron castings, joining dissimilar metals and building up bearings and other wearing sur-

Iron Trade Review's Calendar of New Equipment

Item	Comment	Builder	No.	Date Described	Page
Drive fittings	High-pressure type; installed in open oil holes	Alemite Mfg. Co.	22	Feb. 7	400
Blowpipe	For welding work on airplane fuselages	Oxweld Acetylene Co.	23	Feb. 7	400
Crane	Locomotive type; gasoline, diesel or electric drive	Link-Belt Co.	24	Feb. 7	400
Stoker	Multiple retort underfeed stoker	Combustion Engineering Corp.	25	Feb. 7	400
Wrenches	Socket wrenches made up into several sets	Blackhawk Mfg. Co.	26	Feb. 7	401
Electric control	Time-current principle; 250 volts or less	Electric Controller & Mfg. Co.	27	Feb. 7	401
Grinder	Full automatic reversible cup wheel grinder	Samuel C. Rogers & Co.	28	Feb. 7	401
Lighting unit	For high bay lighting; reflector of prismatic glass	Holophane Co. Inc.	29	Feb. 14	469
Drop hammer	Improved accuracy and operation on board drop hammer	Chambersburg Engineering Co.	30	Feb. 14	469
Floor charger	Auto electric type; serves heating furnaces, presses, etc.	Edgar E. Brosius Inc.	31	Feb. 14	471
Taps and dies	Collapsing taps and opening dies with removable chasers	National Acme Co.	32	Feb. 14	471
Buckets	Digging and rehandling buckets; variety of sizes	Owen Bucket Co.	33	Feb. 14	472
Exhauster	For grinding and polishing machines; motor driven	Hisey-Wolf Machine Co.	34	Feb. 14	472
Woodworking machine	Portable electric; 29 different cutting operations	DeWalt Products Corp.	35	Feb. 14	472
Cutting machine	Oxyacetylene unit for curved and straight cutting	Air Reduction Sales Co.	36	Feb. 21	528
Grinder	Ball bearings; fine and coarse wheels	United States Electrical Tool Co.	37	Feb. 21	529
Compensator	Exposed sparking eliminated by new contact method	General Electric Co.	38	Feb. 21	529
Buffer	Performs polishing and buffing operations	Hill-Curtis Co.	39	Feb. 21	529
Relays	New line of temperature overload relays	General Electric Co.	40	Feb. 21	529
Indicator	Detects presence of combustible vapors in air	Union Carbide Sales Co.	41	Feb. 21	529
Floor armor	Steel mat for reinforcing concrete and asphalt floors	Blaw-Knox Co.	42	Feb. 28	591
Welding rod	High-strength welding rod for bronze welding operations	Oxweld Acetylene Co.	43	Feb. 28	591
Grinder	Heavy-duty type; duplex tables may be uncoupled	Cincinnati Grinders Inc.	44	Feb. 28	592
Compressors	Eleven models ranging from ¼ to 5 horsepower	Curtis Pneumatic Machinery Co.	45	Feb. 28	593
Electrode holder	Water-cooled; for use in manual carbon arc welding	Lincoln Electric Co.	46	Feb. 28	593
Grinder	Equipped with attachment for grinding large cams	Norton Co.	47	Feb. 28	593



No. 44—Plain self-contained grinder with duplex table which can be uncoupled for short bar grinding

faces. Due to its composition it has a uniformly low melting point and easily controlled flow. By its use, tough and ductile weld metal having a tensile strength of over 45,000 pounds per square inch can be produced.

Properties of this rod eliminate almost all boiling and fuming of the weld metal. Annoying fumes are reduced to minimum and elimination of oxide and gas inclusion is a reason for both the sound and strong weld metal produced and the better adhesion of iron and steel.

Control Centralized on Heavy Duty Grinder

No. 44

Cincinnati Grinders Inc., Cincinnati, has brought out a new heavy duty grinder built with a duplex table, a ball bearing grinding wheel spindle mounting, and proportionally increased power and capacity. On the machine bed, 61 feet long, are mounted duplex tables with a maximum length capacity of 28 feet between centers.

The special feature of the machine is the design which permits the duplex tables to be uncoupled and allows the short end to remain in position at one end of the bed. The work headstock or tailstock, as the case may be, then is transferred to the table in use. This is made possible by the forced feed oiling system to the table ways. One or both tables can be used continuously or intermittently without loss of accuracy in the bed due to localized wear.

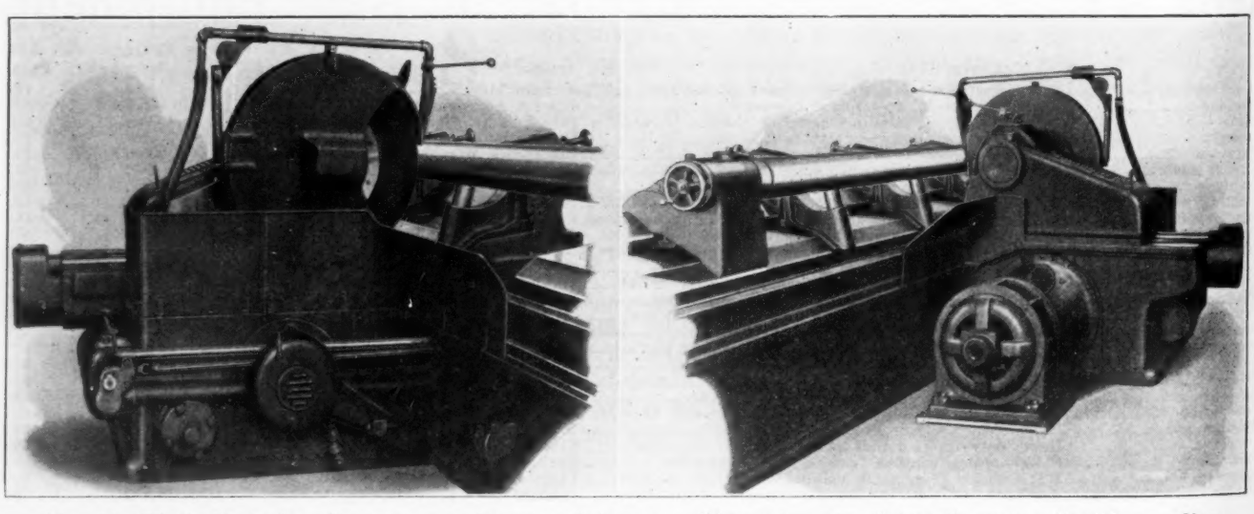
Unit construction is used throughout and the control is centralized. A 30-horsepower motor, drives the jackshaft mounted on antifriction bearings. No motor vibrations are transmitted to the machine. There is a texrope drive from the jackshaft to the grinding wheel spindle. The latter is mounted in precision ball bearings and is arranged for alemite lubrication.

The possibility of error is reduced by having the wheel travel in the traverse direction only. The base is subdivided into front and rear units. The front base is made of three sections to facilitate transportation. The rear base forms a housing for the jackshaft; centrifugal coolant pump with capacity of approximately 35 gallons a minute; part of the cross-feed mechanism and a power rapid traverse unit.

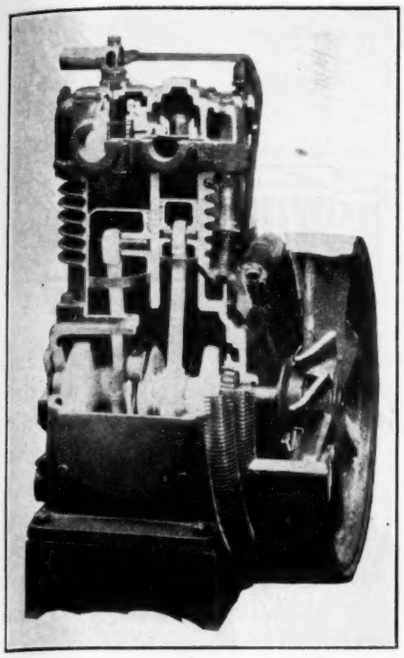
The power rapid traverse equipment for the wheel head is driven by a ½-horsepower motor and is supplied on demand. The operation is controlled by a single lever, and either power or hand traverse is disengaged automatically when not in use. The headstock is driven by a 3-horsepower direct current, variable-speed motor through texrope reduction and a worm and worm wheel running in an oil bath. Back gears are provided for work speed variations. The motor is mounted on the headstock with its axis perpendicular to the work axis. Direct current, if not available, is supplied to the headstock motor by a generator mounted on the rear base and driven by the main motor through an antifriction bearing jackshaft.

The headstock is clamped to the table by three bolts and can be moved along the table by a rack and pinion. The footstock is of heavy design and is screw operated. Means for clamping and moving the footstock are similar to those of the headstock.

The swivel tables are of the angular



No. 44—Work 36 inches diameter can be ground in gap. The main motor drives through a flexible coupling



No. 45—Air-cooled compressor

type; they take their bearings on the sliding table and are clamped to the latter at each end. Taper work up to 14 feet long can be ground on the swivel table without throwing the head or the footstock centers out of alignment.

The sliding table receives its motion through a rack and pinion and a worm. A tarry clutch functions at each reversal of the table, eliminating shocks and decreasing pinion stresses. Hand traverse of the table also is provided. Without changing his normal position at the front of the machine, the operator can reach any controlling lever with ease.

Introduces New Line of Air Compressors

No. 45

Curtis Pneumatic Machinery Co., 1901 Kleinlen avenue, St. Louis, has placed a new line of air compressors on the market, which are adapted primarily for use with air tools, air hoists, industrial spray painting equipment, pneumatic water systems, door openers, grain dumps, etc. The complete line includes 11 models ranging from ¼ to 5 horsepower, and 150 to 200 pounds pressure. Three general classes of compressors make up the complete line, namely, the single cylinder, single stage; the two cylinder, single stage, known as the duplex; and the two stage. All compressors are designed for either automatic or manual starting. The cylinders and crank case are all of heavy cast construction, the base being cast integral with the crank case. Air-cooled units are equipped with heavy radiating vanes cast integral with the cylinder wall, which is honed. Pistons and rings are ground to size. The crankshaft and connecting rods are drop forged. Main bearings are Timken tapered roller units and a simple form of enclosure prevents the escape of lubricant.

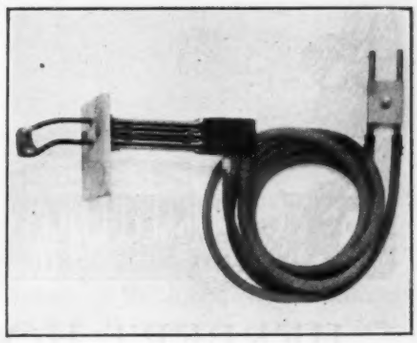
Carbon Electrode Holder Is Water Cooled

No. 46

Lincoln Electric Co., Cleveland, has announced a new type water-cooled carbon electrode holder for heavy duty manual welding by the carbon arc process. Due to the design of the electrode holder it is possible to weld with the arc tip of the carbon electrode projecting less than 3 inches from the carbon holder. Consequently there is less carbon area heated thereby greatly reducing the vaporization of the carbon. Thus it is possible to use smaller size carbons with higher current density.

One of the features, which contributes to the light weight of the holder, is the use of the hose which carries the water to also carry the cable to the holder. Each of the two water tubes contains a small light cable from the connecter to the holder. The water flowing through the holder serves to cool the cables.

The carbon holder consists of coiled copper tubing through which water constantly circulates, the carbon electrode being inserted through the coil. The carbon holders are manufactured in sizes for use with ¼, $\frac{5}{16}$, ⅜ and ½-inch carbons. A hand shield of compressed magnesium protects the operator's hand from the arc rays. The water cooling system is incorporated also in the hand grip of the holder to keep it cool.

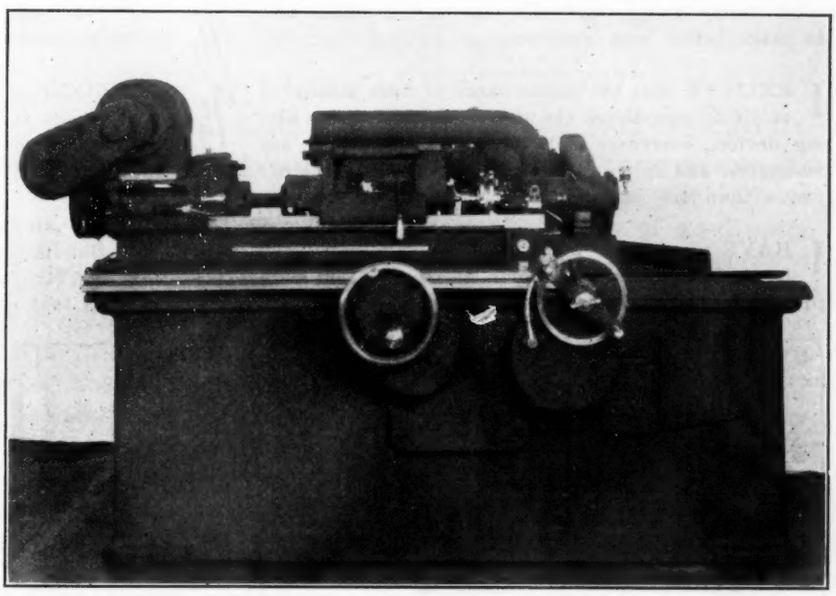


No. 46—Water-cooled carbon electrode holder

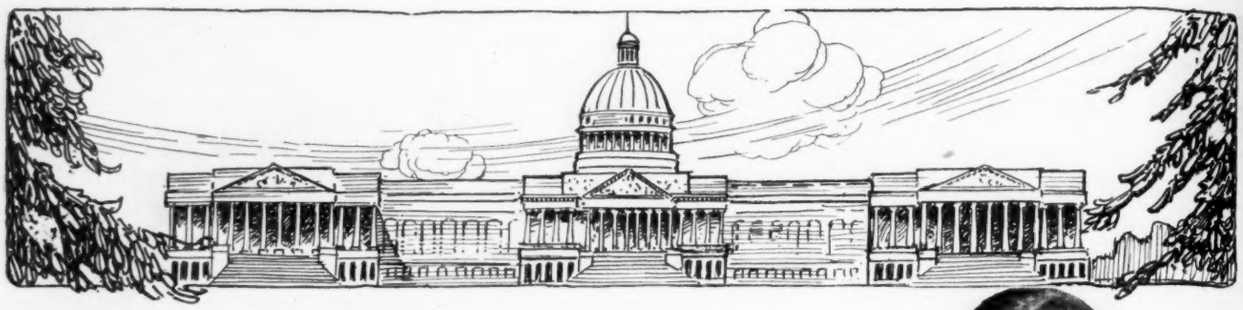
Large Diameter Cams Are Ground on New Unit

No. 47

Norton Co., Worcester, Mass., is introducing a machine equipped with a motor-driven grinding wheel spindle and a cam grinding attachment for large diameter loose cams. The cam grinding attachment is driven from a special headstock having an extra speed reduction to obtain the slow speeds of revolution necessary in grinding this type of cam. Wear of the grinding wheels is always an important factor in cam grinding as a small reduction in the size of the wheel will affect the shape of the contour. When using small wheels on large cams the wheel wears rapidly, and for accurate work the final finish grinding must be accomplished with a new wheel the same diameter within close limits as the roller used in generating the master roller for generating the master cams.

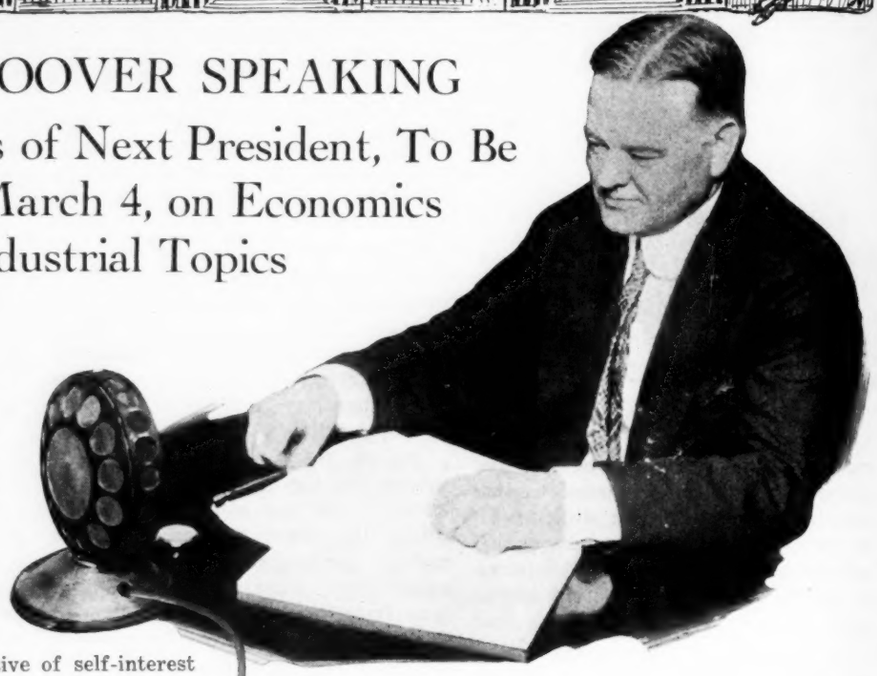


No. 47—Grinding machine with attachment for grinding large cams



HERBERT HOOVER SPEAKING

Pithy Declarations of Next President, To Be Inaugurated March 4, on Economics and Industrial Topics



THE whole economic structure of our nation and the survival of our high general levels of comfort are dependent upon the maintenance and development of leadership in the world of industry and commerce.

* * *

BUSINESS organization is moving strongly toward the co-operative. Co-operation in its current sense represents the initiative of self-interest blended with a sense of service.

* * *

THE necessity of maintaining a high wage level requires that all processes of manufacture and distribution be reduced to the lowest possible cost. This can be done through elimination of wastes arising out of too high a degree of diversification in certain basic products.

* * *

IF BY steady economic improvement we shall yet further reduce poverty, shall create and secure more happy homes, we shall have served under God to make better men and women.

* * *

I BELIEVE that the maintenance of high standards of living stimulates the development of labor saving devices, increases skill in our workmen and our managers, and in this way we compensate for higher wages than are paid abroad.

* * *

I HAVE no patience with those who deliberately try to confuse industry's efforts at co-operation with price fixing and restraint of trade. Any intelligent person will find these efforts to be in the interest of public welfare. They are the foundation of real competition.

* * *

THE government should establish channels of transportation through the air, just as it has established channels of transportation through the water, and should keep them free to all comers.

* * *

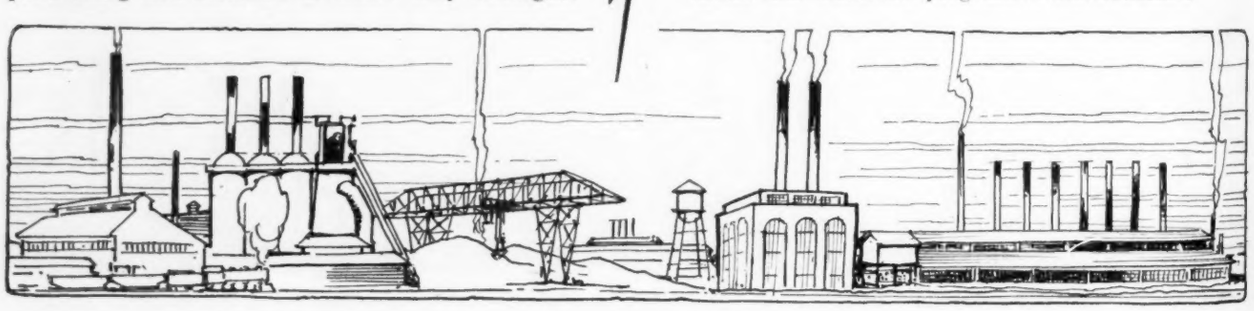
WHEN business cures its own abuses it is true self-government which comprises more than political institutions.

* * *

THERE is one side of the federal government that is not sufficiently expanded; that is scientific and economic research, and promotion of public interest by voluntary co-operation with the community at large.

* * *

I AM an individualist—an unashamed individualist. But let me say also that I am an American individualist, for America has steadily been developing the ideals that constitute progressive individualism.



Editorials

Only Bona Fide Scrap Rejections

WORTHY as is the effort to organize the iron and steel scrap industry and set up a code of practice, it cannot succeed without the co-operation of consumers of scrap. Improved relationships between the two groups are highly desirable. *Caveat emptor* should give way to mutual confidence.

At the moment, consumers can make a needed gesture toward this ideal of curbing their tendency to reject scrap. It is traditional that rejections are numerous on a falling market but scarce on a rising one. And in those districts in which scrap prices have broken badly in the past three weeks, a considerable tonnage has been rejected.

Under the circumstances the dealer has no alternative. He pockets his loss and, being human, mentally lists an account to be squared at a later date. It may well be that the rejection is prompted by recollection of ill treatment, fancied or otherwise, at the hands of the particular dealer. In any event, reprisals are inevitable and good feeling is not furthered.

Doubtless when the Institute of Scrap Iron and Steel completes the organization of chapters and sets the scrap industry in order, this matter of rejections is one that will receive early attention. A frank discussion across the table between representatives of both sides should help.

The iron and steel scrap industry performs a service to the iron and steel industry. Despite talk of bypassing and trading direct, the legitimate broker and yard has survived distressing conditions since the war. One way of improving relationships is for dealers not to ship subgrade material and for consumers not to reject merely because they did not foresee a softer market.

Roads Turn to Integral Castings

AN IMPORTANT and interesting development in the steel foundry industry is the organization of the General Steel Castings Corp., jointly owned by the American Steel Foundries, American Locomotive Co. and Baldwin Locomotive Works. It is hard at work on the construction of a plant at Eddystone, Pa., near Philadelphia. The size of the enterprise is indicated by the fact that 11,000 tons of structural steel will be required for constructing the buildings which will comprise various units of the plant.

This new plant is being erected to meet the more exacting demands of the locomotive builders for steel castings. It will produce various locomotive castings but will be equipped particularly for the integral casting of locomotive beds, so that the frame, cylinder, bumper, cross ties, boiler saddle and pump bracket all will be cast in one piece. Another interesting casting to be made there in quantities will be integrally cast tender frames provided with a water bottom in accordance with the trend in railroad design to lower the center of gravity.

These integral castings now are an accepted standard with a good many railroads. Hitherto the demand for them has been supplied by the Commonwealth Steel Co., St. Louis, with works at Granite City, Ill. Of late the demand for such castings has exceeded the capacity of this concern. Only one of the recent orders it has received calls for integral castings for 100 locomotives for use on the New York Central railroad.

The adoption of integral castings, of course, supplants to a growing extent the market for smaller locomotive castings which must be assembled, so that the change has much significance to the steel castings industry as a whole.

Of much interest is the decision to locate the new plant near Philadelphia, adjacent to the site of the large new plant of the Baldwin Locomotive Works, at Eddystone, indicating that Philadelphia continues to be regarded as a good center for locomotive production.

Beehive Coke Strong but Sensitive

PRICE strength in beehive furnace coke has stood out in the raw materials market in recent weeks, indicative chiefly of good operations in the pig iron industry. The spot price of the furnace grade advanced sharply from around the $2.75 level that prevailed the latter part of 1928 and early this year to $3 and more, the highest figure in more than a year.

Changes in the beehive coke industry in recent years make difficult comparisons of current production and prices with those prevailing prior to 1928. Weekly output of about 135,000 tons of beehive coke early in 1927 compares with 45,000 tons 12 months later. This restricted production in a large measure has sustained prices.

Since the first of this year ovens have been turning out from 60,000 to 65,000 tons of coke weekly, against 45,000 to 50,000 tons a year ago. In February, 1928, however, the price of furnace fuel had declined to $2.60, from $2.75 in January.

The recent price upturn was attended by steady shipments against contracts and a consequent lack of surplus to accommodate new buying. Two steelworks contracted for substantial tonnages over February and March, and succeeding buyers found little available coke remaining. Cold weather played a part in this buying, however, one mill finding it necessary to replace by beehive fuel, by-product coke it had sold for domestic use.

Furnace coke prices are subject to sharp changes. A slump in melters' requirements would speedily increase supplies. Thousands of ovens idle today easily might break the market were they to be lighted. Only when prices touch $3, however, is it considered profitable to place additional ovens in blast. The fact that current demand generally is for immediate requirements deprives operators of an assurance of extended operations on a $3 basis and may serve to continue restricted oven operations and a strong market.

Vacations for Workers Near

AN IMPORTANT development is the announcement by Edgar S. Bloom, president of the Western Electric Co. of the extension of vacations with salary to 15,000 factory workers, making 40,000 shop and office workers who will be given vacations at an expense of $3,000,000 to that company. Shop men will be on the same basis as office workers, namely, one week with salary to those who have been with the company a year and two weeks to those with the company two years or more.

This problem of vacations with pay to shop workers and labor in general has received much consideration the past few years, so the decision of the Western Electric Co. does not take the industrial world entirely by surprise. Nevertheless, this company's decision gives the problem a nearer aspect. It is probable other companies will follow the lead.

The economic significance of free vacations to factory workers is a matter of concern among employers. Manufacturers who in the past highly competitive decade have had to use utmost ingenuity to come out on the right side of the ledger cannot afford to proceed rashly in a matter which means an increase of 4 per cent in their labor cost.

No more sweeping change could be imagined than the abandonment, some years back, of the 12-hour working shift and double turn in the steel industry. On its face, the change meant so great an increase in the cost of producing steel that no single company would have dared to take the initiative, and it was only by co-operation of the steel industry as a whole, at the request of the President of the United States, that the change was made. But the steel industry lived through the ordeal and the change actually brought many benefits. Steel companies developed labor saving machinery and methods and actually have reduced the cost of making steel.

The cost of vacations to shop workers undoubtedly will be absorbed in various ways, and particularly by efficiencies in manufacturing operations. On the other hand, there may be a gain. All workers can work more efficiently when they have occasional periods of recuperation. Too, it costs money to go on a vacation, which means more money in circulation. The general history of industrial development in this country would tend to indicate that the principal objections to free vacations to shop employes relate to factors incidental to their adoption, and that eventually they would be absorbed in our general industrial system. At any rate, with free vacations now enjoyed by all kinds of clerical workers and others who constitute a very large percentage of the 42,000,000 classified workers in this country, it is clear that the tendency toward free vacations all around already has made considerable headway.

Overhead Crane Orders Auspicious

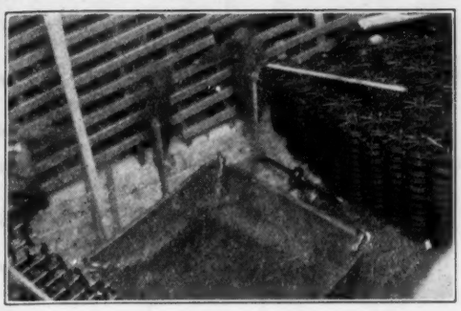
FOLLOWING two years of lean business, with last year the poorest since 1922, the sharp increase in January orders for electric overhead cranes, as recently announced, is decidedly stimulating to builders of this equipment. Valued at $1,383,257, these orders were not only the heaviest since October, 1926, when the total was $1,428,975, but also the second largest in at least four years. They established January as one of only seven months within that period to have a total volume of business that equaled or exceeded $1,000,000; they compared with monthly averages of $897,513 and $973,929, respectively, in the two boom years of 1925 and 1926.

While clearly demonstrated in more than one instance in recent years that volume alone does not necessarily spell prosperity for an industry, a well-filled order book is nevertheless a most valuable component. Combined with efforts now being made to improve trade and merchandising practices, more months such as the one just recorded would prove highly beneficial to the electric overhead crane industry.

IRON TRADE REVIEW

Volume 84, Number 9 — Published Every Thursday

E. L. SHANER, Editor. — *J. D. PEASE, Advertising Director.* — *F. F. LIGHT, Circulation Manager.*



American Steel Dotting the Globe, in Form of Motorcars. Page 577.

THE American automotive industry's premier position as a consumer of steel has been pointed out in recent issues of IRON TRADE REVIEW, notably in the survey published Feb. 14, showing distribution of finished steel. Motorcars have taken the lead over railroads, and as railroad consumption is normal the automobile industry is likely to continue in its present dominating position for some time. In this issue, the analysis is carried a step farther. "Rising Exports Will Maintain Auto Industry as Leading Steel User" is of special interest to thousands of manufacturers.

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IRON TRADE REVIEW is published by the Penton Publishing Co., Cleveland, O. Member, Audit Bureau of Circulation; Associated Business Papers Inc.; and National Publishers Association. Branch offices: 1147 People's Gas Bldg., Chicago; 410 Traction Bldg., Cincinnati; 2203-2206 No. 220 Broadway, New York; 2148-49 Oliver Bldg., Pittsburgh; 24 California street, San Francisco; 1653 Pennsylvania avenue, Washington; and Boston. Foreign offices: Prince's Chambers, Birmingham, Eng.; Caxton House, Westminster S. W. 1, London; 9 Rue de Londres, Paris, France; Wilhelmstrasse 114, Berlin, S. W. 48, Germany; cable address: *PENTON*, Cleveland; *IROTRAPEN*, London. Terms: Subscription in United States, Cuba and Mexico, $6 per year; in Canada, $8.50 per year and in Great Britain and other countries £2:0:0 per year. *Entered at the Postoffice at Cleveland as Second Class Matter.* *Copyright 1929 by the Penton Publishing Co.*

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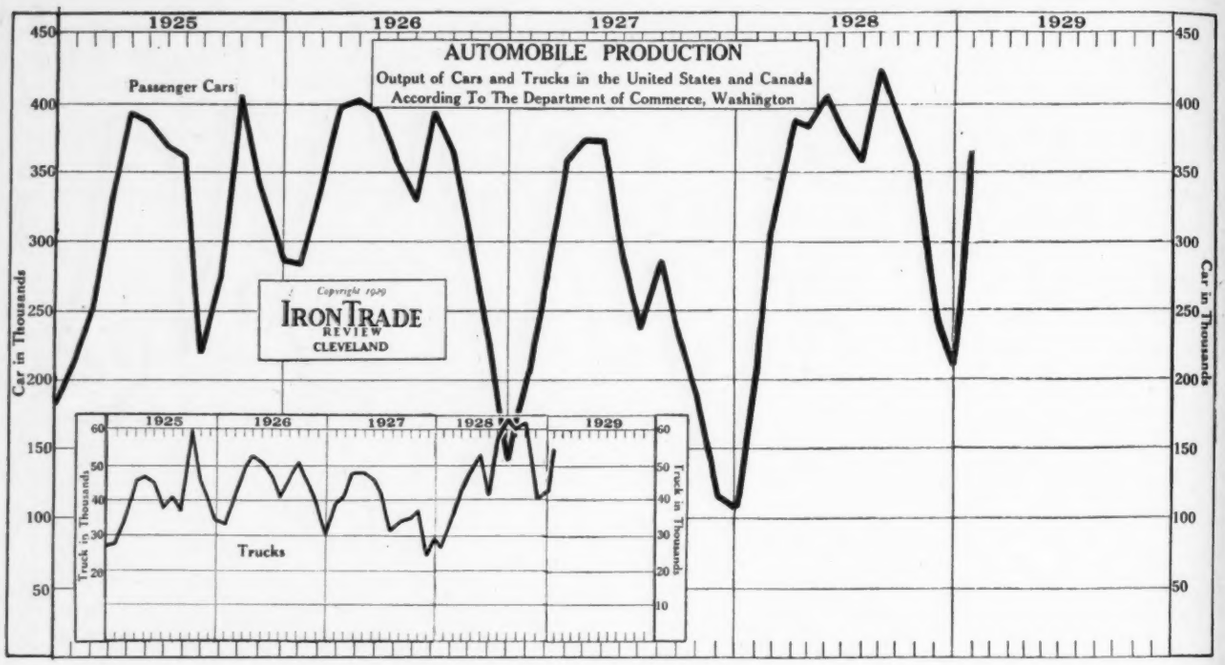
The Business Trend



Motor Car Industry Making Records

By JOHN W. HILL, Financial Editor

IN THE belief that the performance of the automobile industry will set the tone of industrial activity for the current year, the attention of business and finance is focused upon the motor car field. The record of the production figures thus far is a highly favorable one. Undeniably, the industry has entered new high ground of output.

DURING January the production of cars and trucks in the United States and Canada exceeded early estimates. The total was 423,600 compared with 243,300 in December and with 240,000 in January, 1928. In no other January has there ever been a total such as this. The best previous Januarys were in 1926 and 1924 when outputs reached about 324,000 for both months.

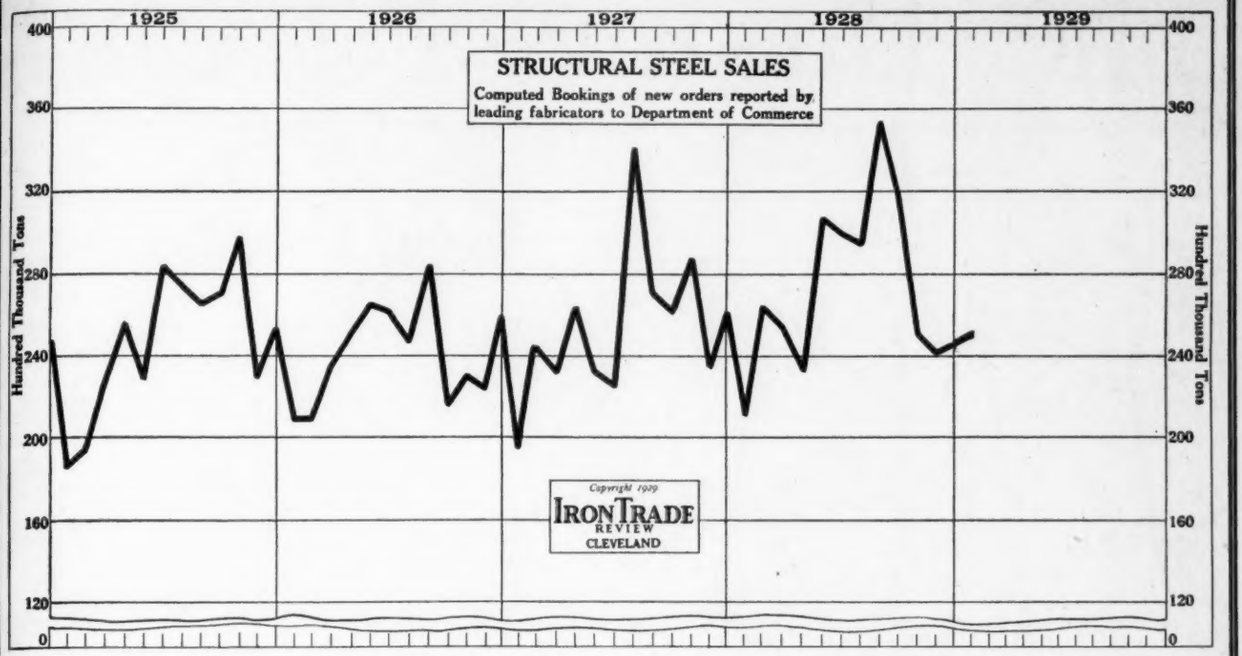
THE output in January was almost 75 per cent greater than in December, and 70 per cent greater than in January one year ago. During February the automobile plants were reported as further expanding production and another new record for the current month is freely predicted. The best previous February was in 1926 with a total of 381,000 cars and trucks.

SUCH large outputs naturally are resulting in keener competition in the industry. The outcome of this competition for sales cannot be ascertained at this early date as it is too soon for the spring buying to be on in full swing. However, popular demand is sufficiently indicated to result in some lagging in production by one or two important manufacturers in the face of the industry's general record.

THE full story will not be known until the spring buying season is under way. Just now the producers are engaged in supplying dealers with stocks as well as in taking care of current demand. At the beginning of the year stocks of many cars were low, but this situation now practically has been corrected.

WITH the opening of spring, the extent of buying demand will promptly be reflected in production schedules of the various companies. The most interesting problem to be solved in the industry this year involves the come-back of Ford and its effect upon other producers. Ford's production is now estimated at more than 7000 cars daily. For the next two months, at least, record breaking motor outputs are probable.

The Business Trend

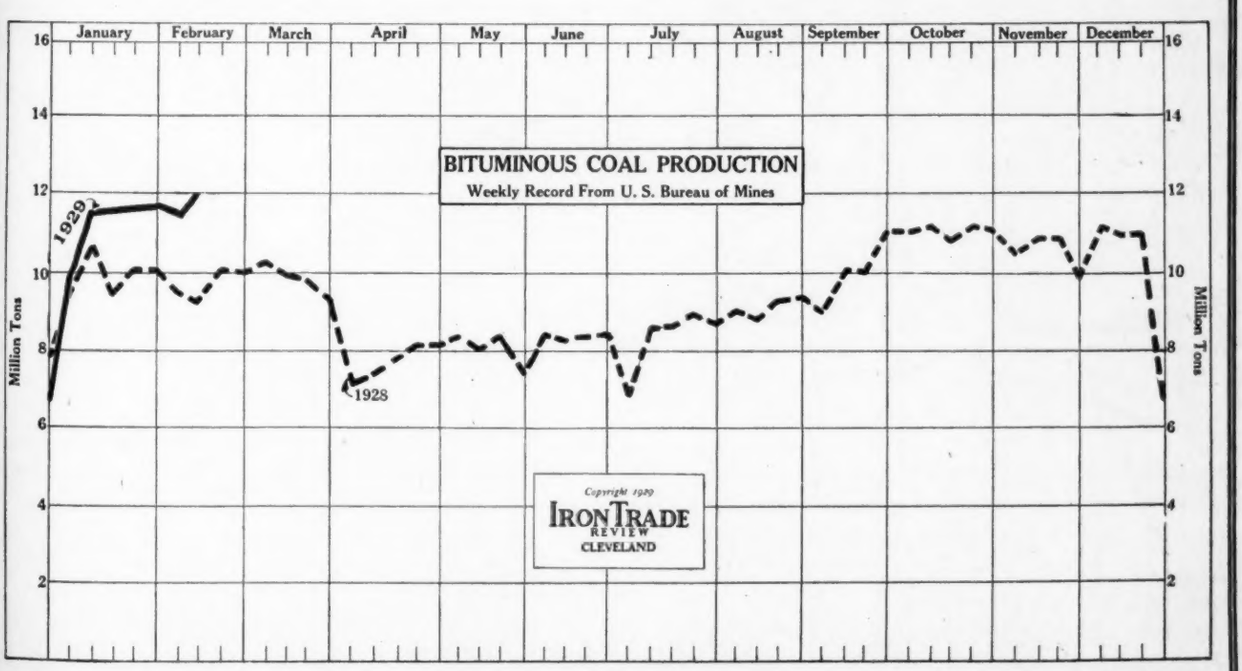


Structural Steel Sales

NEW orders for fabricated structural steel in January, as reported to the department of commerce by leading manufacturers, were 69 per cent of capacity. Computed tonnage of new orders for the month stood at 246,400 tons. In December the volume of orders was 64 per cent of capacity and in January, 1928, it was 55 per cent. The computed tonnage of shipments in January amounted to 273,350 tons compared with 204,050 tons in January, 1928, and 195,000 tons in January, 1927.

Coal Output

THE production of bituminous coal continues to increase. During the second week of February the output was estimated at 12,090,000 net tons. This is an increase of 3.6 per cent over the preceding week. Compared with the corresponding week in 1928, when 9,749,000 tons of soft coal was produced, an increase of 24 per cent is shown. Increased production of coal reflects expansion of industrial activities together with improved labor conditions in the coal regions. Stocks of coal now are practically at a normal level.



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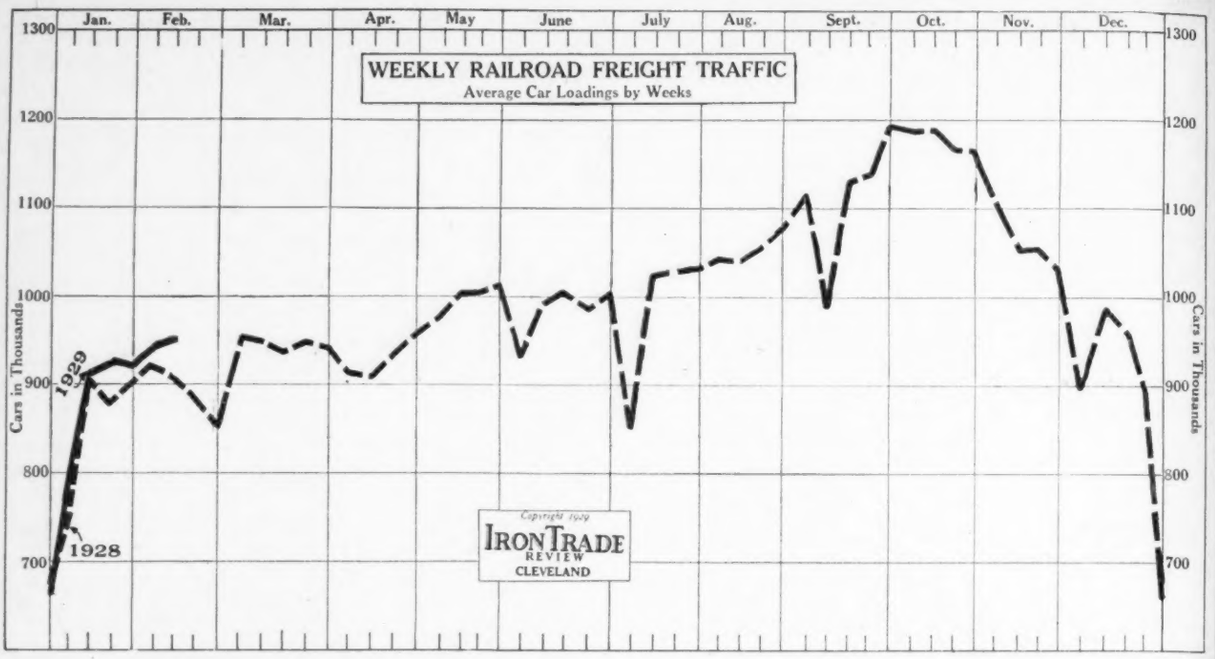
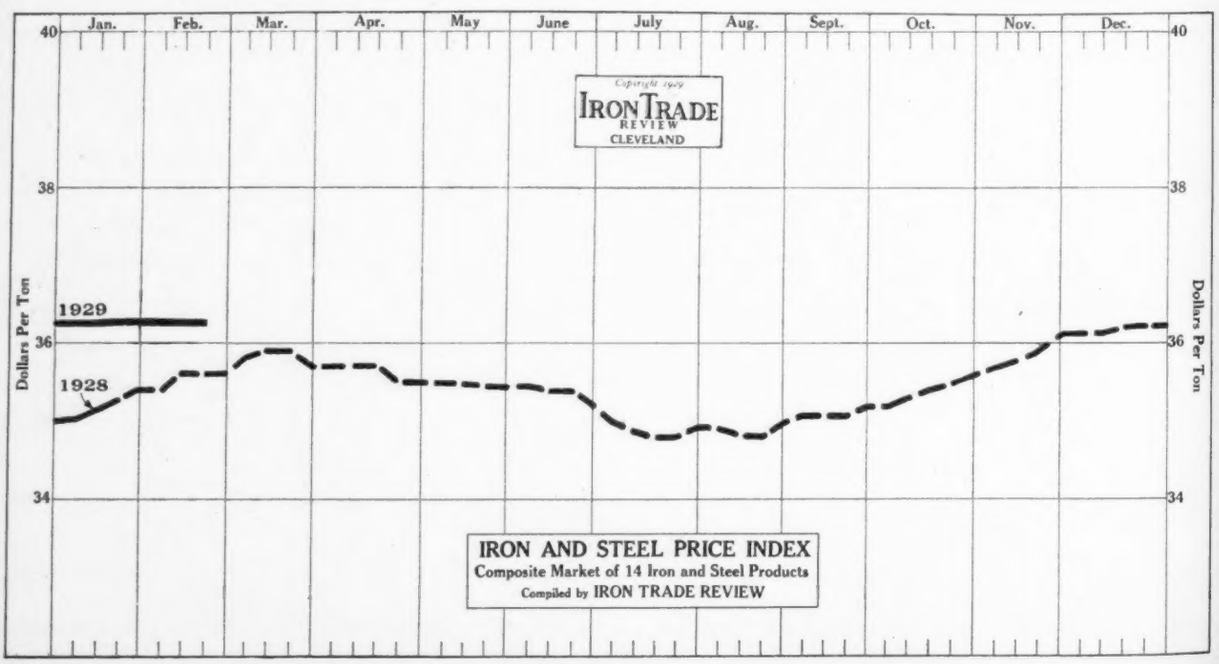


Weekly Railroad Traffic

LOADINGS of revenue freight in the second week of February totaled 955,478 cars. This was an increase of 8586 cars over the preceding week and a gain of 49,001 cars over the corresponding week of one year ago. Compared with the corresponding period of 1927 there is apparent a decline of 7124 cars. Declines from one year ago were shown in loading of live stock, merchandising and foreign products, while other classes of loadings including coal and ore showed a gain.

Steel Price Index

HIGHER asking prices are appearing in the iron and steel industry. This was a natural sequence to the underlying firmness of quotations which has persisted since the first of the year in the face of record breaking production of iron and steel. IRON TRADE REVIEW'S composite market average in the third week of February had not reflected higher price levels. The composite stood at $36.25, practically unchanged since the first of the year. The composite is higher than one year ago when it stood at $35.62.



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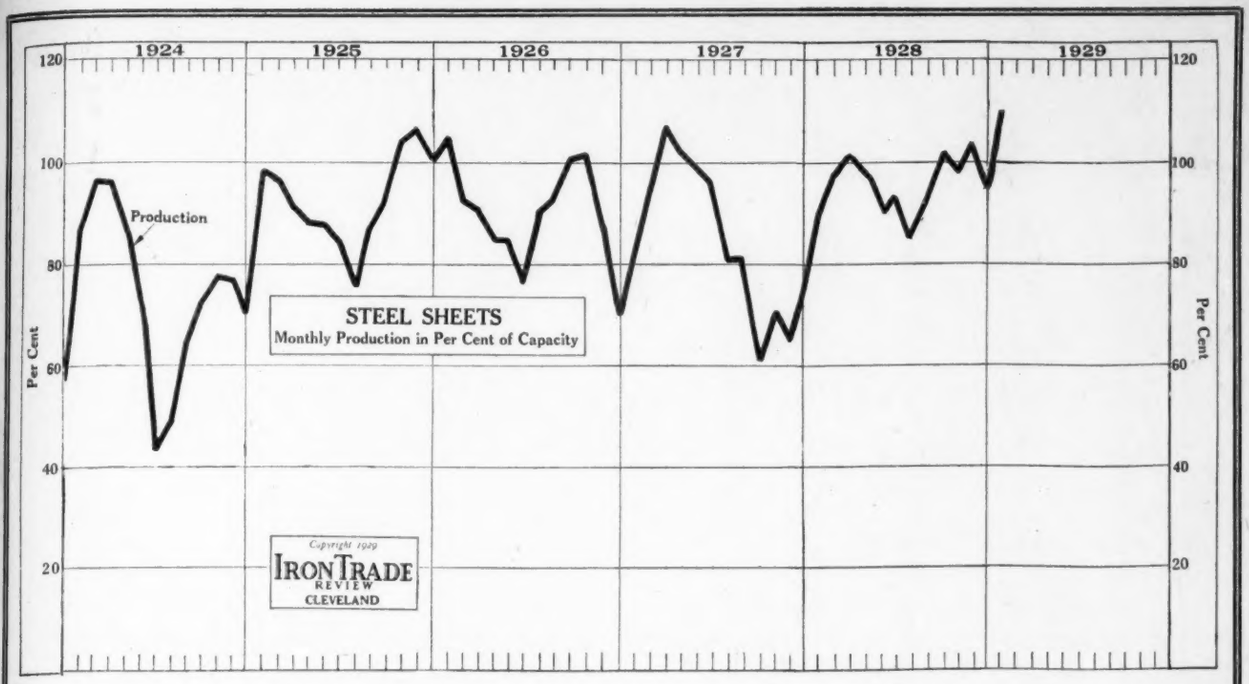
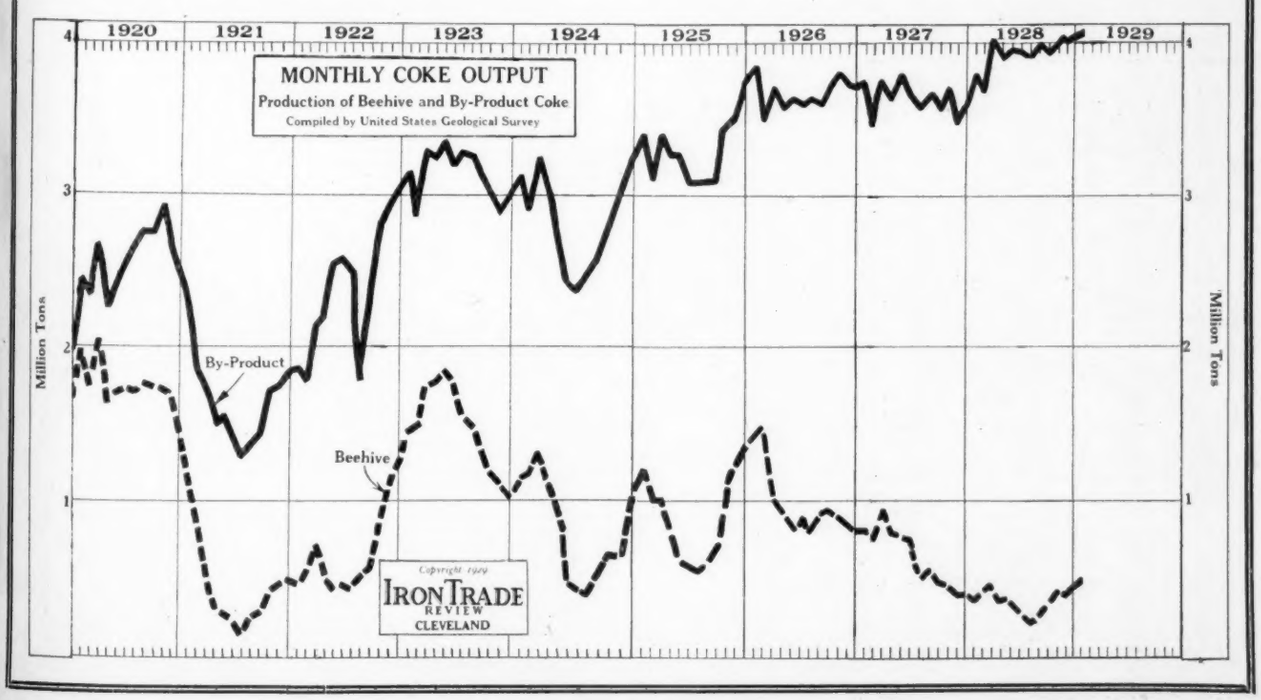


Steel Sheets

AN IMPORTANT increase in activities of sheetmakers took place in January. According to the National Association of Flat Rolled Steel Manufacturers, the production of sheets during January was 109.9 per cent of capacity compared with 95.1 per cent of capacity in December. Total sales for the month were 438,390 tons and 123 per cent of capacity. Unfilled tonnage as of Feb. 1 amounted to 183 per cent of capacity or 652,602 tons. The large output reflects record breaking motor car production.

Coke Production

DURING four consecutive months the by-product coal industry has established new high records of daily average output. In January a total of 4,360,194 tons of coke was produced. This compared with 4,316,891 tons in December and with 3,897,122 tons in January, 1928. The production of beehive coke also increased, rising from 397,800 tons in December to 479,100 tons in January. In January, 1928 beehive coke output was 375,800 tons. Greater by-product output is resulting from larger blast furnace operation.



First Half Production Peak Nears

Believe Record January and February Not Anticipatory—Semifinished Up $1—Chicago and Valley Mills at Capacity—Sheet Sales Record

STEEL production is at the threshold of what is normally the best sixty days of the year. Though January and February have been record breaking, there are no indications that this has been at the expense of March and April tonnage. Requirements of the automotive industry and the railroads, which are the chief support of the current market, promise to be sustained well into spring.

Deadline on Specifications Approaches

On such important lines as steel bars, sheets and strip, delivery dates have drawn farther away in the past week. With concluding specifications against first quarter contracts for finished products scheduled to be in producers' hands by March 15, this condition apparently will be aggravated. Further advances in prices make current contracts the more attractive.

Semifinished steel continues the bottleneck of production, especially in the Chicago, Pittsburgh and Youngstown districts. Some finishing capacity lies idle for want of sheet bars and billets. Some steelmakers, having consumed substantially all of their semifinished output, are in the open market seeking material to apply on contracts.

An advance of $1 has been made in semifinished steel, with talk of premiums in the Youngstown and Pittsburgh districts. The recent $2 rise in all grades of sheets, excepting full finished, receives reinforcement by the adherence of the leading producer. Wire products' makers have reaffirmed current prices for the second quarter, which is tantamount to an increase of $2 because of the large carryover of fourth quarter business.

No Clouds Now on Production Horizon

An analysis of factors which will largely determine finished steel production over the next sixty days discounts any exterior adverse influences. Production of track material will be seasonally high through most of the second quarter. Automotive needs for steel, already at a record for the season, are more likely to expand than contract, as the spring assembly peak is rarely passed before May. Freight car awards assure heavy steel specifications into the third quarter. The approach of spring normally heralds a revival

Comparative Prices of Iron, Steel and Coke

Representative Market Figures for This Week, Last Month, Three Months and One Year Ago

	Feb. 27, 1929	Jan., 1929	Nov., 1928	Feb., 1928
PIG IRON				
Bessemer, del., Pittsburgh	$20.01	19.96	19.96	19.26
Basic, valley	17.50	17.50	17.70	17.00
Basic, eastern del., eastern Pa.	20.15	20.15	19.75	19.50
No. 2 foundry, del. Pittsburgh	19.26	19.36	19.56	19.01
No. 2 foundry, Chicago	20.00	20.00	20.00	18.50
*Southern No. 2, Birmingham	16.50	16.50	16.38	16.00
*Southern Ohio, No. 2 Ironton	18.50	18.50	18.25	19.00
**No. 2X, Virginia furnace	21.25	21.25	20.50	20.50
**No. 2X, eastern del. Phila.	22.01	22.26	21.51	20.91
Malleable, valley	18.00	18.00	17.90	17.25
Malleable, Chicago	20.00	20.00	20.00	18.50
Lake Superior charcoal, del. Chicago	27.04	27.04	27.04	27.04
Gray forge, val., del. Pittsburgh	18.76	18.76	18.66	18.51
Ferromanganese, del. Pittsburgh	109.79	109.79	109.79	104.79
*1.75 to 2.25 silicon. **2.25 to 2.75 silicon.				
COKE				
Connellsville, furnace, ovens	3.00	2.75	2.85	2.65
Connellsville, foundry, ovens	3.75	3.75	3.75	3.75
SEMIFINISHED MATERIAL				
Sheet bars, open-hearth, Youngstown	35.00	34.00	33.60	34.00
Sheet bars, open-hearth, Pittsburgh	35.00	34.00	33.60	34.00
Billets, open-hearth, Pittsburgh	34.00	33.00	33.00	33.00
Wire rods, Pittsburgh	42.00	42.00	42.00	43.50

	Feb. 27, 1929	Jan., 1929	Nov., 1928	Feb., 1928
FINISHED MATERIAL				
Steel bars, Pittsburgh	1.90	1.90	1.95	1.85
Steel bars, Chicago	2.00	2.00	2.00	1.95
Steel bars, Philadelphia	2.27	2.27	2.27	2.17
Iron bars, Chicago	2.05	2.00	2.00	1.95
Shapes, Pittsburgh	1.90	1.90	1.95	1.85
Shapes, Philadelphia	2.01	2.06	2.11	2.08
Shapes, Chicago	2.00	2.00	2.00	1.95
Tank plates, Pittsburgh	1.90	1.90	1.95	1.85
Tank paltes, Philadelphia	2.15	2.10	2.15	2.10
Tank plates, Chicago	2.00	2.00	2.00	1.95
Sheets, black, No. 24, Pittsburgh	2.85	2.85	2.80	2.85
Sheets, blue anl., No. 10, Pittsburgh	2.10	2.10	2.05	2.10
Sheets, gal., No. 24, Pittsburgh	3.60	3.60	3.55	3.65
Sheets, black, No. 24, Chicago	3.00	3.00	3.00	3.05
Sheets, blue anl., No. 10, Chicago	2.25	2.25	2.15	2.25
Sheets, galvanized, No. 24, Chicago	3.75	3.75	3.65	3.90
Plain wire, Pittsburgh	2.50	2.50	2.40	2.45
Wire nails, Pittsburgh	2.65	2.65	2.55	2.60
Tin plate, per base box, Pittsburgh	5.35	5.35	5.30	5.25
SCRAP				
Heavy melting steel, Pittsburgh	18.50	19.00	17.35	15.05
Heavy melting steel, eastern Pa.	16.00	16.50	15.95	14.00
Heavy melting steel, Chicago	15.75	15.40	14.50	12.55
No. 1 wrought, eastern Pa.	16.25	15.50	15.50	15.25
No. 1 wrought, Chicago	15.75	14.75	14.25	12.40
Rails for rolling, Chicago	17.50	17.10	16.50	15.00

Current Prices for Rolled Steel Products

PRICES IN CENTS PER POUND UNLESS OTHERWISE INDICATED

STEEL PLATES

Pittsburgh, base	1.90c to 1.95c
Philadelphia, del.	2.10c to 2.25c
New York, del.	2.175c to 2.325c
Boston, del.	2.265c to 2.415c
Chicago, base	2.00c to 2.10c
Cleveland, delivered	2.09c to 2.14c
Lackawanna, N. Y., base	2.00c to 2.10c
Birmingham, base	2.10c to 2.20c
Coatesville, Pa., base	2.00c to 2.10c
Pacific Coast, c.i.f.	2.20c to 2.25c

STRUCTURAL SHAPES

Pittsburgh, base	1.90c to 1.95c
Philadelphia, del.	2.00c to 2.10c
New York, del.	2.145c to 2.195c
Boston, del.	2.265c to 2.415c
Chicago, base	2.00c to 2.10c
Cleveland, delivered	2.09c to 2.14c
Lackawanna, N. Y.	2.00c to 2.10c
Birmingham, base	2.10c to 2.20c
Bethlehem, Pa., base	2.00c to 2.10c
Pacific Coast, c.i.f.	2.35c

BARS

SOFT STEEL

Pittsburgh, base	1.90c to 1.95c
Chicago, base	2.00c to 2.10c
Birmignham, base	2.10c to 2.20c
Lackawanna, N. Y., base	2.00c to 2.10c
Pacific Coast, c.i.f.	2.35c
Cleveland, base, local mills	1.90c to 1.95c
Cleveland, del., outside mills	1.95c to 2.00c
Philadelphia, del.	2.22c to 2.37c
New York, delivered	2.24c to 2.39c
Boston, delivered	2.265c to 2.415c
Pittsburgh, cold finishing	2.05c
Pittsburgh, forging quality	2.15c

RAIL STEEL

Chicago Heights	1.95c
Eastern mills	1.85c to 1.95c

IRON

Chicago, base	2.05c to 2.15c
New York, delivered	2.19c to 2.24c
Philadelphia, delivered	2.17c to 2.22c
Pittsburgh, refined	2.75c to 4.25c

REINFORCING

Pittsburgh, billet, cut lengths	2.25c
Stock lengths from mill	2.00c
Chicago, billet	2.35c to 2.60c
Chicago, rail steel	2.05c
Chicago, rail steel, road and bridge work	1.95c to 2.05c
Philadelphia, cut lengths	2.75c

COLD FINISHED STEEL

Cold finished steel bars drawn or rolled, Pitts., Chi., c.l.	2.20c to 2.30c
Do, del. Detroit	2.475c to 2.575c
Shafting (turned, polished) Pittsburgh	2.20c to 2.30c
Shafting (turned, ground) mill (Depending on size, 1 3/16 to 7-inch)	2.65c to 3.10c
Cold finished steel bars, Cleve.	2.25c to 2.35c

TIN AND TERNE PLATE

Prices per 100-pound box Pittsburgh

*Tin plate, coke base	$5.35

Gary, Ind., base 10 cents higher.

Long ternes, primes, No. 24	4.00c to 4.10c

*Price subject to quantity differentials.

SHEETS

SHEET MILL BLACK

No. 24, Pittsburgh, base	2.85c to 2.95c
No. 24, Philadelphia, delivered	3.17c to 3.27c
No. 24, Gary, Indiana Harbor	2.95c
No. 24, Chicago, delivered	3.00c
No. 24, Birmingham, base	3.00c

TIN MILL BLACK

No. 28, Pittsburgh, base	3.00c
No. 28, Gary, base	3.10c

GALVANIZED

No. 24, Pittsburgh, base	3.60c to 3.70c
No. 24, Philadelphia, delivered	3.92c to 4.02c
No. 24, Gary, Indiana Harbor	3.70c
No. 24, Chicago, delivered	3.75c
No. 24, Birmingham, base	3.75c

BLUE ANNEALED

No. 10, Pittsburgh, base	2.10c to 2.20c
No. 10, Philadelphia, delivered	2.42c to 2.52c
No. 10, Gary, Indiana Harbor	2.20c
No. 10, Chicago, delivered	2.25c
No. 10, Birmingham, base	2.25c

AUTOMOBILE

No. 20, Pittsburgh, base	4.10c
No. 20, delivered Detroit	4.39c

FURNITURE

No. 24, Grade A, Pittsburgh	4.00c to 4.10c
No. 24, Grade B, Pittsburgh	3.80c to 3.90c

(Turn to the following page)

of construction and enhanced demand for many steel lines from rural districts.

Coke continues the most active of raw materials. In some recent transactions the beehive furnace grade has commanded $3.10, an advance of 10 cents. By-product coke at Indianapolis, Cincinnati and Ohio river points will be advanced 50 cents per ton March 1. Iron and steel scrap has shaken out much of its recent weakness and some large buying is reported. The return of marked activity in pig iron is slow but steady. February shipments constituted a record.

Delivery on bars at Chicago is six to eight weeks deferred, with automotive requirements not yet at their maximum. In no February have Chicago mills shipped so many bars. Car builders at Chicago are specifying nearly 15,000 tons of plates weekly, while new business from the oil country totals 13,000 tons. Three thousand tons of plates has been placed at Pittsburgh for river barges, while 4500 tons is being distributed for a water line at Youngstown.

Heavy Steel Contracting Not Yet Brisk

Industrial and bridge work is conspicuous in the week's structural awards, the Chesapeake & Ohio placing 4000 tons for shops, while a 4500-ton bridge has been ordered at Chicago. The highly competitive condition in which fabricating shops find themselves is stimulating inquiry. Only at Chicago is contracting for second quarter bars, plates and shape a factor. In that district consumers seek a place on mill books to insure deliveries; in other districts producers await an appraisal of the rise to 1.95c, Pittsburgh, before seeking contracts.

Delivery of full finished sheets by some makers has backed up into May despite capacity output. Furniture sheets are now quoted $2 higher. January sales of independent producers, at 438,390 tons, were at a record height and compared with 302,921 tons last January. Strip and cold finished bars are in principal demand by automotive users. Weather conditions soon will stimulate demand for wire products.

Steel Rates Make Another Gain

Railroad equipment buying continues heavy, 3234 cars and 32 locomotives being ordered.

Steelmaking operations at Chicago have attained practical capacity with the lighting of two additional stacks at Gary. The district's ingot rate now averages 95 per cent, with such finishing mills as bars and plates at capacity. Three more open-hearth furnaces have been lighted at Youngstown, making 48 out of the 51 of independent units in operation. The lack of semifinished steel is acute. The steel rate at Pittsburgh is 85 to 90 per cent. Only five of the 32 open-hearth furnaces at Buffalo are cold. Steel corporation plants are at 91 per cent this week, up 1 point. Advanced prices on semifinished steel applying immediately because of a scarcity, the IRON TRADE REVIEW composite of 14 leading iron and steel products is up 12 cents this week, to $36.27, the highest in 18 months.

Composite Market Average

Based on Pig Iron, Billets, Slabs, Sheet Bars, Wire Rods, Steel Bars, Plates, Structural Shapes, Black, Galvanized and Blue Annealed Sheets Tin Plate, Wire Nails and Black Pipe

This week (Feb. 27, 1929)	$36.37
Last week (Feb. 20, 1929)	36.25
One month ago (January, 1929)	36.24
Three months ago (November, 1928)	36.02
One year ago (February, 1928)	35.62
Ten years ago (February, 1919)	53.71
Fifteen years ago (February, 1914)	23.52

Current Rolled Steel Prices

PRICES IN CENTS PER POUND UNLESS OTHERWISE INDICATED
SEE ALSO PRECEDING PAGE

HOOPS, BANDS, STRIPS

Hot strip, to 6-in., Pitts.	2.00c
Hot strip 6 1/1x to 24-in., Pitts.	1.90c
Hot rolled strip, 12 to 24-inch 16 gage and heavier, coils or cut length, plate basis, or 2.10c blue annealed basis.	
Hot strip, bands 6 in. and under, Chicago	2.20c to 2.30c
Do, 6 1/1x to 24 in.	2.10c to 2.20c
Cooperage stock	2.20c
Cold rolled strip, hard coils, 16 inches and under by 0.100-inch and heavier, base Pitts., Cleve. (3 tons and over)	2.75c to 2.85c
Worcester, Mass (3 tons and over)	3.10c to 3.20c

ALLOY STEEL

Hot Rolled
F.o.b. Mills

Alloy Quality Bar Base is 2.60c to 2.75c

S.A.E. Series Number	Alloy differential	Net, 100 lb. bars
2000	0.25	$3.00
2100	0.55	3.30
2300	1.50	4.25
2500	2.25	5.00
3100	0.55	3.30
3200	1.35	4.10
3300	3.80	6.55
3400	3.20	5.95
4100 0.15-0.25 Mo.	0.50	3.25
4100 0.25-0.40 Mo.	0.70	3.45
4600 0.20-0.30 Mo. 1.25-1.75 Ni.	1.05	3.80
5100 0.60-0.90 Cr.	0.35	3.10
5100 0.80-1.10 Cr.	0.45	3.20
5100 Chrome Spring	0.20	2.95
6100 Bars	1.20	3.95
6100 Spring Steel	0.95	3.70
Chrome Nickel Vanadium	1.50	4.25
Carbon Vanadium	0.95	3.70
9250 (flats)	0.25	3.00
9260 (rounds, squares)	0.50	3.25

TUBING

Boiler

Carload Discounts—F.o.b. Pittsburgh Mills

Steel 3¼ to 3¾-inch	56
Charcoal iron, 3¼ to 3½-inch	18
Seamless hot rolled 3¼ to 3½-inch	56

Lapwelded steel takes two supplementary 5 per cents for carload lots; charcoal, 10 per cent; seamless, 5 per cent.

Note: Discounts for additional sizes and less-than-carload shipments shown in Discounts and Extras table in back of book.

COLD DRAWN SEAMLESS

F.o.b. mill in desirable quantities

Random lengths, over 5 feet	55 per cent
Selected lengths, 1 to 18 feet	53 per cent

WIRE PRODUCTS

F.o.b. Pittsburgh, Cleveland, Ironton base
(Per pound)

	Dealer trade	Large jobbers
Bright plain wire, 6 to 9 gage	2.60c	2.50c
Annealed field wire	2.75c	2.65c
Galvanized wire	3.20c	3.10c
Barbed wire, galvanized	3.40c	3.30c
(Per 100-pound keg)		
Wire nails	$2.75	$2.65
Galvanized nails	4.75	4.65
Polished staples	3.20	3.10
Galvanized staples	3.45	3.35
Cement coated nails	2.75	2.65
Manuf. wire, del. Detroit		2.735c
Wire nails, del. Detroit		$2.90

Joliet, DeKalb and Waukegan, Ill., Anderson, Ind., and Chicago prices $1 per ton over Pittsburgh-Cleveland-Ironton base on products made there; Duluth $2 higher; Worcester, Mass., Fairfield, Ala., $3 higher.

Woven wire fencing, retailers, Pittsburgh-Cleveland, net ton $65.

Anderson, Ind., $1 higher, Chicago $2 higher, Duluth, Birmingham $3 higher.

CUT NAILS, CHAIN, PILING

Cut nails c.l., f.o.b. mills	2.75c
Cut nails, l.c.l. f.o.b. mills	2.85c
Chain, 1-in., proof coil, Pitts.	6.00c
Sheet piling base, Pittsburgh	2.25c

CAST IRON WATER PIPE

Prices per net ton
Class B pipe

Six-inch and over, Birming'm	$37.00 to 38.00
Four-inch, Birmingham	41.00 to 42.00
Four-inch, Chicago	49.20 to 50.20
Six-inch to 24-inch, Chicago	45.20 to 46.20
Four-inch, New York	42.80 to 44.80
Six-inch and over, New York	39.80 to 41.80
Standard fittings, Bir. base	$100.00

Six to 24-inch, base; over 24-inch, plus $20; 4-inch, plus $10; 3-inch, plus $20; gas pipe fittings, $5 higher.

Class A pipe is $4 higher than Class B.

IRON AND STEEL PIPE

Base Discounts Pittsburgh and Lorain, O., to Jobbers in Carloads

	Black	Galv.
1 to 3-inch butt steel*	62	50*
1 to 1½-inch butt iron	30	13

Indiana Harbor, Ind., and Evanston, Ill., 2 points less, Chicago, del., 2½ points less.

*To large jobbers these discounts are increased on black by 1 point and a supplementary discount of 5 per cent on galvanized by 1½ points with a supplementary 5 per cent.

RAILS, TRACK MATERIAL

Standard bessemer rails, mills	$43.00
Standard open-h'th rails, mill	$43.00
Relaying rails, St. Louis	$24.00 to 31.00
Relay rails, Pitts. 60 to 90 lb.	$22.00 to 27.00
Light rails, 25 to 45, mills	$36.00
Angle bars, Chicago base	2.75c
Spikes, railroad, Pittsburgh	2.80c
Spikes, small railroad, 7/16-inch and smaller, Pitts.	2.80c
Spikes, boat and barge, Pitts.	3.00c
Spikes, railroad, Chicago	2.80c
Track bolts, Pitts., steam roads	3.80c
Track bolts, Pitts., stand, jobbers	70 off list
Track bolts, Chicago	3.80c
Tie plates, Chicago, Pitts.	$43.00

BOLTS AND NUTS

Birmingham and Chicago

Discounts are for legitimate jobbing or large consuming trade purchasing in full-case lots, apply to lists of April 1, 1927.

Small lots are 55 to 60 per cent off.

CARRIAGE BOLTS

All sizes, cut thread	60 to 70 off

Rolled thread ⅝ x 6 and smaller take 10 per cent lower list.

Eagle list	60 to 70 off

MACHINE BOLTS

All sizes, cut thread	60 to 70 off

Rolled thread ⅝ x 6 and smaller take 10 per cent lower list.

Lag screws	60 to 70 off
Plow bolts, Nos. 1-2-3-7 heads	60 to 70 off
Tap bolts	60 to 70 off
Blank bolts	60 to 70 off
Stud bolts without nuts	60 to 70 off

Stove bolts, 75, 20, 10 and 5 off in pkgs., 75, 20, 10 and 5 with 2½ off in bulk.

Tire bolts	60-5 off

Nuts

Semifinished	60 to 70 off

HEXAGON CAP SCREWS

Milled	80-10-5 off
Upset 1 in. diam. and smaller	85 off

SQUARE HEAD SET SCREWS

Milled	80-5 off
Upset 1 in. diam. and smaller	80-10-5 off

RIVETS

Struc. c.l., Pitts.-Cleve.	2.90c to 3.10c
Structural, c.l., Chicago	3.00c to 3.20c
**7/16-inch and smaller, Pitts.	70 and 10 off
Chi., Cleve.	70 to 70 and 10 off

**Some makers quoting 70 off with freight allowed on 300 pounds or more.

WASHERS

Wrought, c.l., Pitts. dist.	$6.50 to 6.75 off
Wrought, c.l., Chicago dist.	$6.70 to 6.90 off
Lock: to dealers	85-5 off
Lock: to consumers	85 off

Raw Materials and Semifinished Products

SEMIFINISHED MATERIAL

Prices Per Gross Ton

BILLETS AND BLOOMS

4 x 4-inch base

Pittsburgh, open-hearth	$34.00
Pittsburgh, bessemer	34.00
Youngstown	34.00
Cleveland	34.00
Philadelphia	38.30 to 39.30
Chicago	35.00
Forging, Chicago	40.00
Forging, Pittsburgh	38.00 to 39.00
Forging, Philadelphia	43.30 to 44.30

SHEET BARS

Pittsburgh	$35.00
Youngstown	35.00
Cleveland	35.00
Chicago	35.00

SLABS

Pitts., Young., and Cleve.	$34.00

WIRE RODS

Pittsburgh, Cleveland	$42.00
Chicago	43.00

SKELP

All grades, Pittsburgh	1.90c to 1.95c

IRON ORE

LAKE SUPERIOR ORE

Per Gross Ton, Lower Lake Ports

Old range bessemer, 51½%	$4.55
Mesabi bessemer, 51½%	4.40
Old range nonbessemer 51½%	4.25
Mesabi nonbessemer, 51½%	4.25

EASTERN LOCAL ORES

Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic, 56-63%	8.00
Copper free low phosphorus 58 to 65 per cent	nominal

FOREIGN ORE

Cents per unit, alongside docks, Atlantic ports

Foreign manganiferous ore, 45-55% iron, 6-8% manganese	10.50 to 11.00
North African low phosphorus	10.00 to 11.00
Swedish foundry or basic, 65%	9.00 to 9.50
Spanish and North African basic, 50 to 60 per cent	nominal
Newfoundland foundry, 55%	8.50

MANGANESE ORE

Prices do not include duty of 1 cent per pound of metallic manganese contained.

Brazilian	35 cents
Indian	35 to 36 cents
Caucasian, (53-55 per cent.	36 to 38 cents

FLUORSPAR

85 and 5 per cent grade

Washed gravel, Kentucky and Illinois mines, per net ton	$18.00
Washed gravel, imported duty paid, east, tidewater, gross ton	$19.40 to 20.40

REFRACTORIES

FIRE CLAY BRICK

Per 1000 f.o.b. works

First Quality

Pennsylvania	$43.00 to 46.00
Ohio	43.00 to 46.00
Illinois	43.00 to 46.00
Kentucky	43.00 to 46.00
Missouri	43.00 to 46.00
Maryland	43.00 to 46.00
Georgia and Alabama	40.00 to 45.00

Second Quality

Pennsylvania	35.00 to 38.00
Ohio	35.00 to 38.00
Illinois	35.00 to 38.00
Kentucky	35.00 to 38.00
Missouri	35.00 to 38.00
Maryland	35.00 to 38.00
Georgia and Alabama	30.00 to 35.00

SILICA BRICK

Pennsylvania	43.00
Joliet, Ill., East Chicago, Ind.	52.00
Birmingham	50.00 to 51.00

MAGNESITE BRICK

Per Net Ton

9 x 4½ x 2½	65.00

MAGNESITE

Net Ton Chester, Pa., and Baltimore base

Dead-burned grain magnesite	40.00

CHROME BRICK

Net Ton Chester, Pa., and Baltimore base

9 x 4½ x 2½	45.00

Pig Iron

Shipments Continue Heavy—Orders for Second Quarter Still Moderate—Price Easiness Noted in Some Districts

HEAVY shipments of pig iron on contracts, moderate sales for second quarter, and steady prices continue to feature the pig iron market. Substantial tonnages are being placed by some melters, and in the Chicago district practically all of second quarter requirements are expected to be closed within two weeks. A buying movement approaching the size of that of last November, has not appeared. Pig iron prices have not shown the strength that steel has exhibited recently, and consequently some buyers are disposed to wait. Shipments by one of the leading merchant producers so far this year are 25 per cent ahead of the same period of 1928. Buffalo prices are easier for shipment in eastern territory, and valley malleable iron has lost some strength.

PITTSBURGH, Feb. 26.—A slight increase is noted in inquiry for pig iron for second quarter, although the market still lacks briskness from the standpoint of new business. Activity in production and shipments is maintained, with recent reports repeated as to the movement on contracts exceeding output. Furnaces continue to receive occasional orders for a few carloads for filling in, and on such business no change is shown in prices. A recent sale of a substantial tonnage of No. 2 foundry iron indicates $17.50, base, valley, is minimum, although a little has been placed at a higher figure. Malleable appears to have lost some of the strength noted a week ago. One buyer of second quarter tonnage was not required to pay more than $18, valley, with reports heard of some shading of this figure. Bessemer is held at $18.25, although most business is in small lots. Basic is steady at $17.50.

Boston, Feb. 26.—Conditions generally in the pig iron market have developed only minor changes. Sales in the past week were below 5000 tons. The Mystic Iron Works booked 3000 tons, some of which is for delivery in the second quarter. Buffalo iron is said to be procurable at $17, base, furnace.

New York, Feb. 26.—More activity is reflected in pig iron buying in this territory. Foran Foundry & Mfg. Co., Flemington, N. J., has closed on about 2000 tons of foundry iron. New York Air Brake Co. has bought 1500 tons of malleable and low phosphorus grades. Several consumers have closed on smaller tonnages. The inquiry from Worthington Pump & Machinery Corp. still is pending. Several new inquiries which are before the trade here involve 500 tons or less each. Prices are easier. Buffalo iron for shipment to this district now is $17 to $17.50, base, Buffalo, while in certain cases delivered prices have been named which are equivalent to less. A highly competitive condition is reflected in the market here. Indications are that the barge rate on canal shipments from Buffalo to New York harbor will be $2.50 and navigation is expected to open early in April.

Buffalo, Feb. 26.—Considerably more than 50,000 tons of pig iron has been sold this month by Buffalo furnaces. The Massey-Harris Co. has bought about 5000 tons for Canadian plants, and is in the market for 2500 tons for Batavia, N. Y. Little of the Canadian tonnage came to producers on this side of the border. Two Buffalo buyers are in the market for 1000 to 1500 tons each. Prices here are unchanged.

Youngstown, O., Feb. 26.—Only routine sales of foundry and malleable grades of pig iron are being made by furnace interests here at the going quotations of $17.50 for No. 2 foundry and $18 to $18.25 for malleable. The shortage of steel supplies in the valley has brought out at least one inquiry from a local steelworks for basic pig iron in substantial tonnage. While $17.50 is the price at which the last sale of basic was made here, increasing demand is expected to arouse more than passing interest in the market.

Detroit, Feb. 26.—The short inventory policy of most pig iron consumers is causing them to operate on an exceptionally close margin and to trace cars in order to insure uninterrupted melting. Neither consumers nor producers have any stocks worth mentioning and cold weather has hampered delivery somewhat. Although many consumers had already covered for second quarter, buying for this delivery has been at an accelerated rate and a moderate buying movement appears to be getting under way. The market is firm. Delivered in Detroit, No. 2 foundry and malleable are quoted at $20.50; for delivery in Michigan the usual quotation is $20, base, Detroit furnace. Full extras apply.

Chicago, Feb. 26.—Furnace stocks of northern pig iron are being further reduced. Sellers are acquiring heavier order books for second quarter, some estimates being that close to 65 per cent of the generally accepted normal quarter's tonnage has been ordered for that period. Indications are that all large melters will have covered for second quarter within another week. Numerous orders now are being booked for March shipment, supplementary to first quarter contracts. February shipments are practically equal to those of January, for furnaces in this district.

Cincinnati, Feb. 26.—Although several large orders for pig iron were placed last week in this market, no general buying movement for second quarter has started. Inquiry is light. The Lima Locomotive Works bought 500 tons of northern iron from a valley furnace for second quarter. The same furnace also sold 2000 tons to a central Michigan buyer and 400 tons of northern iron in Cincinnati. Another dealer also reports sales of 2800 tons to Indiana consumers. Prices are steady.

St. Louis, Feb. 26.—Scattered buying

(*Concluded on Page* 606)

Pig Iron Prices

Per Gross Ton

Bessemer, valley furnace	$18.25
Bessemer, del. Pittsburgh	20.01
Basic, valley furnace	17.50
Basic, del. Pittsburgh	19.26
Basic, Buffalo furnace	17.50
Basic, del. eastern Pa.	20.15 to 20.76
Malleable, valley furnace	18.00
Malleable, del. Pittsburgh	18.76
Malleable, Cleve. furn. for local del.	19.00
Malleable, Chicago furnace	20.00
Malleable, Buffalo furnace	19.00
Malleable, del. eastern Pa.	21.76 to 22.26
Malleable, Granite City fur.	20.50
No. 1 foundry, Chicago furnace	20.50
No. 1X, eastern del., Phila.	22.26 to 22.76
No. 1X, Buffalo furnace	20.00
No. 2 foundry, del. Pittsburgh	19.26
No. 2 foundry, valley furnace	17.50
No. 2 plain, Buffalo furnace	18.50
No. 2 foundry, Chicago furnace	20.00
No. 2 foundry, Granite City	20.00
No. 2 foundry, Ironton furnace	18.50
No. 2 fdy. Cleve. furn. for local del.	19.00
No. 2 plain, del., Phila.	21.26 to 21.76
No. 2 plain, Virginia furnace	20.75
No. 2 plain, Buffalo, del. Boston	22.41 to 22.91
No. 2 plain, N. J., tidewater	20.28 to 21.28
No. 2 Alabama, Birmingham	16.50 to 17.00
No. 2 Alabama, del. Cincinnati	20.19 to 20.69
No. 2 Tenn., Birmingham base	16.50
No. 2 Tenn., del. Cincinnati	20.19
No. 2 Alabama, del. Chicago	22.51 to 23.01
No. 2 Alabama, del. Cleveland	22.76 to 23.26
No. 2 Alabama, del. St. Louis	21.42
No. 2X, east, N. J., tidewater	20.78 to 21.78
No. 2X, eastern, del. Phila.	21.76 to 22.26
No. 2X, foundry, Buffalo furnace	19.00
No. 2X, Buffalo, del. Boston	22.91 to 23.41
No. 2X, Virginia furnace	21.25
Gray forge, val., del. Pittsburgh	18.76 to 19.26
Low phos., standard, valley	27.00
Low phos., standard, Phila.	24.26 to 24.76
Low phos., copper bearing fur.	23.00 to 23.50
Charcoal, Superior, del., Chicago	27.04

CANADIAN PRICES

No. 2 foundry, del. Toronto	23.60
No. 2 foundry, del. Montreal	25.00 to 25.50
Malleable, del. Toronto	23.60
Malleable, del. Montreal	25.00 to 25.50
Basic, del. Montreal	24.00 to 24.50

Silvery iron, Jackson county, O., furnaces, in per cents: 5—$23 to $24; 7—$25 to $26; 8—$26 to $27; 9—$27 to $28; 10—$29 to $30; 11 $31 to $32; 12—$33 to $34; 13—$35 to $36.

Bessemer ferrosilicon, Jackson county, O., furnaces, in per cents: 10—$31 to $32, 11—$33 to $34; 12—$35 to $36; 13—$37 to $38; 15—$41.50 to $42.50; 16—$43 to $44.

Coke

Production Increased, but Prices Continues Strong — Foundries Taking Larger Shipments

COKE output by merchant ovens in the Connellsville district has increased to the highest point in more than a year, but fuel continues scarce, and prices strong. The leading interest has lighted 650 additional ovens. Steelworks are absorbing all of their own by-product coke. Shipments to foundries have increased. A stronger price situation is noted in other districts.

Pittsburgh, Feb. 26.—The beehive coke market has lost none of its recent strength, despite the increase in output by merchant ovens to the highest level in more than a year. Contract shipments by leading producers are absorbing all their current production, keeping them out of the spot market. A number of inquiries for furnace coke are appearing, for small lots and prompt shipment, on which buyers are finding no fuel available below $3. Some sales have been made at $3.10. Active operations by steelworks are requiring most of their by-product coke output. The A. C. Frick Coke Co. has lighted 650 additional beehive ovens in the Connellsville district. Recent cold weather and the demand for heating coke have advanced prices of this grade 35 cents to $2.85, for medium sulphur fuel. Little is available, but moderation in the weather is expected to relieve the situation. Foundry coke prices are steady, although some consumers have increased their requirements and shipments are slightly heavier.

Production of coke in the Connellsville region for the week ended Feb. 16 was 66,380 tons, compared with 63,800 tons the preceding week, according to the *Connellsville Courier*.

Cincinnati, Feb. 26.—Prices in by-product foundry coke are to go up 50 cents a ton on March 1, bringing Ashland, Ky., and Portsmouth, O., to $7.50 and Indianapolis, delivered, to $9.64 for Cincinnati deliveries. Prices for delivery in Indiana remain the same. The situation in the Detroit area remains tense. Some beehive coke is finding its way into this area in an attempt to meet the demand.

New York, Feb. 26.—Specifications for foundry coke are unusually good, while spot demand is fair. Prices on foundry coke are unchanged and steady. The beehive furnace coke market is $3.15 to $3.30, Connellsville, this range applying to prices brokers obtain from consumers.

St. Louis, Feb. 26.—The movement of metallurgical coke to consumers continues on a large scale, reflecting steadily increasing melt at mills, foundries and machine shops. A fair volume of new ordering is reported.

Coke Prices

Prices per Net Ton

Beehive Ovens	
Connellsville furnace	$3.00 to 3.10
Connellsville foundry	3.75 to 4.85
New River foundry	6.00 to 6.50
Wise county foundry	4.25 to 5.25
Wise county furnace	3.50 to 4.25
By-Product Foundry	
Newark, N. J., del.	9.00 to 9.40
Chicago, ovens	8.00
New England, del.	11.00
St. Louis, del.	9.00
Birmingham	5.00
Indianapolis, del.	9.64
Ashland, Ky.	7.50
Portsmouth, O.	7.50
Detroit ovens	9.00
Buffalo, ovens	8.75

Ferroalloys

Shipments Continue Heavy—Orders Larger Than Last Year

Pittsburgh, Feb. 26.—Ferroalloy specifications show little change. Shipments are in large volume for this period. Total tonnage placed so far this year for ferroalloys is larger than in the like period of 1925. A few spot orders are noted and current prices are $34 for 19 to 21 per cent spiegeleisen and 109.79, delivered, Pittsburgh, for ferromanganese. Special ferroalloys also are active. Fluorspar is firm at $18, but little spot business is being received.

Chicago, Feb. 26.—Indications are specifications and shipments of ferroalloys reached a new high mark for February. A much wider use of high carbon ferrochromium has developed among gray iron foundries. Demand in the past ten days has been active for prompt ferromanganese in several hundred pound lots. The carlot price for spiegeleisen remains $34, eastern furnaces, for 19 to 21 per cent. Additional tonnage sales have been made in this district direct by furnaces.

Pig Iron

(*Concluded from Page* 605)

of pig iron continues in this district, but melters are disposed to hold off on filling full second quarter requirements. The situation, however, still is featured by exceptionally heavy shipments. Sales reported in the past several days total about 4600 tons, of which St. Louis Gas & Coke Corp. booked 3650 tons. The largest single transaction involved 1000 tons for a manufacturer of wheels for farm implements in Iowa. An Illinois equipment manufacturer took 1000 tons, and 500 tons was ordered by a Moline jobbing plant. Prices are fairly firm.

Cleveland, Feb. 26.—Shipments of pig iron so far this year are 25 per cent ahead of the comparable period in 1928, a leading producer reports. Shipments generally have been increasing since December, but have not caught up with the rate that prevailed in November. A buying movement for the second quarter has not yet developed, although substantial sales continue to be made for that period. Some producers do not expect the buying movement will be as large as that of last November. Lake furnaces, however, are greatly encouraged by reports from the automotive industry. Sales in the past week booked by furnace interests represented here total 33,300 tons. This compares with 53,000 tons reported for the week preceding, which included one lot of 20,000 tons of foundry iron, sold by a Cleveland interest. Cleveland furnace prices are firm at $19, base, for local delivery, and $18.50, base, for outside shipment.

Philadelphia, Feb. 26.—Pig iron specifications against contracts continue brisk, but new sales as a rule are small. The only important new inquiry is for 1500 tons of foundry iron for the Baldwin Locomotive Works' Eddystone plant. The price continues $20.50 to $21, base, eastern Pennsylvania furnace.

Birmingham, Ala., Feb. 26.—With 18 blast furnaces in operation, 10 on foundry iron, production is well maintained. Shipments have improved. Books have not been opened for second quarter, but indications are that the base price will be $16.50.

Toronto, Ont., Feb. 26.—Merchant pig iron still is in strong demand. Second quarter contracting is comparatively quiet, although inquiry indicates considerable forward buying when producers open their books in about a week. The Canadian Furnace Co., Port Colborne, Ont., blew out its blast furnace for repairs and relining. Prices are firm.

Ferroalloy Prices

(In dollars, except ferrochrome)

Ferromanganese, 78 to 82 per cent tidewater duty paid	$105.00
Ferromanganese, del. Pittsburgh	109.79
Spiegeleisen, 19 to 21 per cent domestic furnace spot†	34.00
*Ferrosilicon, 50 per cent, freight allowed, carloads	88.50
*Do., less carload	88.50
Do., 75 per cent	130.00 to 150.00
Ferrochrome, 66-70 chromium, 4-6 carbon, cts. per lb. con., del.	11.00
Do., for spot delivery	11.50
Ferrotungsten, stand., lb. cont.	1.04 to 1.10
Ferrovanadium, 30-40 per cent, per lb., contained, on analysis	3.15 to 3.65
Ferro-carbon-titanium carload, producer's plant, net ton	160.00
Do, one ton to carload	170.00
Ferrophorphorus, per ton, carload 17 to 19 per cent, Rockdale, Tenn., basis (18 per cent)	91.00
Ferrophosphorus, electrolytic, per ton, carload, 23-25% f.o.b. Anniston, Ala. (24 per cent)	122.50

†Quantity diff. apply on 100 tons and over.
*These prices contract, spot $5 higher.

Scrap

Some Tonnage Sales Help Sustain Market at Prevailing Prices —Most Buying Small Lots

TONNAGE sales at Chicago and in Eastern Pennsylvania have shown strength of the market. At Buffalo a large sale was below the market, as reported, and is being studied. Lack of large supplies is an element of strength. Dealers are somewhat less inclined to speculate than has been the case recently.

Chicago, Feb. 26.—Purchase of several thousand tons of heavy melting steel by a leading steelworks consumer at $16.25, gross, sustains the present market at $15.75 to $16.25. Dealers have been buying at $16. Mill shipments now are moving well. Consumers are moderately well supplied. Further weakening has developed in certain grades, notably cast borings, despite a number of strengthening factors which discredit claims of general weakness. A tonnage sale of borings was made at $12, or 50 cents off the recent market. Dealers are reluctant to buy against orders unless consumers press for shipment. Short selling against the recent high market has become more general. Railends, 2 feet and under, sold as high as $20.60, gross, on tracks, in the Rock Island offering, but it is understood most of the rail crops went to points outside the Chicago district on the Rock Island lines.

Boston, Feb. 26.—Prices for iron and steel scrap continue in limited range. The situation is almost a deadlock. Brokers have buyers for some grades but find it difficult to obtain supplies. Sellers believe the market will

Iron and Steel Scrap Prices

Corrected to Tuesday noon. Gross tons delivered to consumers, except Detroit where dealers' buying prices are shown

Steel Works Scrap

HEAVY MELTING STEEL	
Birmingham	$11.50 to 12.50
Boston, dealers	11.50 to 12.00
Boston, No. 2	10.00 to 10.50
Buffalo, No. 1	16.50 to 17.50
Buffalo, No. 2	14.25 to 14.75
Chicago	15.75 to 16.25
Cincinnati, deal.	13.75 to 14.25
Cleveland, No. 1	15.75 to 16.00
Cleveland, No. 2	15.25 to 15.75
Detroit, No. 1	14.25 to 14.50
Detroit, No. 2	12.00 to 12.25
East Pa., del. mill	16.00
Eastern Pa. No. 2	13.00 to 14.50
N. Y., deal., R. R.	12.50 to 13.00
N. Y., deal., yd.	8.50 to 9.50
Pittsburgh No. 1	18.00 to 18.50
Pittsburgh, No. 2	16.50 to 17.00
St. Louis, No. 1	14.00 to 14.50
St. Louis, No. 2	13.00 to 13.50
Valleys, No. 1	17.50 to 18.00
COMPRESSED SHEETS	
Buffalo	15.00 to 16.00
Chicago	14.25 to 14.75
Cleveland	15.00 to 15.50
Detroit	14.25
E. Pa. new mat.	14.50
Pittsburgh	18.00 to 18.50
Valleys	17.50 to 18.00
BUNDLED SHEETS	
Buffalo	12.50 to 13.00
Cincinnati, deal.	11.00 to 11.50
Cleveland	13.00 to 13.50
Eastern Pa.	11.00 to 11.50
Pittsburgh	16.50 to 17.00
St. Louis	10.00 to 10.50
SHEET CLIPPINGS LOOSE	
Chicago	8.50 to 9.00
Cincinnati	10.00 to 10.50
Detroit	9.00 to 9.50
St. Louis	10.00 to 10.50
STEEL RAILS, SHORT	
Birmingham	12.00 to 13.00
Boston	11.25 to 12.25
Buffalo	19.00 to 20.00
Chicago, (3 feet)	18.50 to 19.00
Chicago, 2 ft. and under	19.50 to 20.00
Cincinnati, deal.	19.00 to 19.50
Detroit	17.00 to 17.50
Pittsburgh	19.50 to 20.00
St. Louis	16.75 to 17.25
STOVE PLATE	
Birmingham	13.00 to 13.50
Boston consumers	11.00 to 11.50
Buffalo	14.75 to 15.00
Chicago, net	12.75 to 13.25
Cinn., deal., net	10.00 to 10.50
Detroit, net	9.50 to 10.00
Eastern Pa.	13.00 to 13.50
N. Y. deal., mill	8.75 to 9.00
Pittsburgh	12.25 to 12.75
St. Louis	13.75 to 14.25
ANGLE BARS—STEEL	
Chicago	17.00 to 17.50
St. Louis	14.50 to 15.00
COUPLERS, SPRINGS	
Buffalo	18.50 to 19.50
Chicago	17.00 to 17.50
Eastern Pa.	19.00 to 19.50
Pittsburgh	20.00 to 20.50
St. Louis	15.75 to 16.00
LOW PHOSPHORUS	
Buffalo, billets and bloom crops	19.00 to 20.00
Eastern Pa.	19.00 to 20.50
Pitts. billet and bloom crops	22.50 to 23.00
Cleve. billet and bloom crops	17.50 to 18.00
FROGS, SWITCHES, GUARDS	
Chicago	16.75 to 17.25
St. Louis	15.25 to 15.75
SHOVELING STEEL	
Chicago	15.75 to 16.25
Cleveland	11.75 to 12.00
Detroit	10.75 to 11.00
Pittsburgh	18.00 to 18.50
St. Louis	13.75 to 14.25

Iron Mill Scrap

RAILROAD WROUGHT	
Birmingham	9.50 to 10.50
Boston, dealers	11.00 to 11.25
Yard wrought	9.00 to 9.25
Buffalo, No. 1	13.50 to 14.00
Buffalo, No. 2	16.00 to 17.00
Chicago, No. 1	15.75 to 16.25
Chicago, No. 2	15.75 to 16.25
Cinn., No. 2	13.75 to 14.25
Eastern Pa.	16.00 to 16.50
N. Y., No. 1 deal.	12.00 to 12.50
Pittsburgh, No. 1	14.50 to 15.00
Pittsburgh, No. 2	18.00 to 18.50
St. Louis, No. 1	13.50 to 14.00
St. Louis, No. 2	13.75 to 14.00
SPECIFICATION PIPE	
Boston	10.75 to 11.25
Eastern Pa.	15.50 to 16.00
New York, deal.	11.25 to 11.75
BUSHELING	
Buffalo, No. 1	15.00 to 16.00
Chicago, No. 1	14.00 to 14.50
Cinn., No. 1 deal.	11.00 to 11.50
Cinn. No. 2	8.00
Cleveland, No. 1	13.00 to 13.50
Cleveland, No. 2	11.25 to 11.75
Detroit, No. 1	12.00 to 12.50
St. Louis, No. 1	10.00 to 10.50
MACHINE SHOP TURNINGS	
Birmingham	9.00 to 9.50
Boston	6.50 to 6.60
Buffalo	8.25 to 8.75
Chicago	9.50 to 10.00
Cincinnati, deal.	9.75 to 10.00
Cleveland	10.50 to 11.00
Detroit	7.25 to 7.50
Eastern Pa.	11.50
New York, deal.	8.00
Pittsburgh	11.00 to 11.50
St. Louis	8.00 to 8.50
Valleys	11.00 to 11.50
MIXED BORINGS, TURNINGS	
For blast furnace use	
Boston, dealers	6.00 to 6.50
Buffalo	11.75 to 12.25
Cincinnati, deal.	10.00 to 10.50
Cleveland	11.25 to 11.75
Detroit	9.00 to 9.25
Eastern Pa.	11.00
New York, deal.	6.25 to 6.50
Pittsburgh	12.00 to 12.50
CAST IRON BORINGS	
Birmingham, chem.	13.00 to 13.50
Birmingham, plain	9.00 to 9.50
Boston, chem.	10.00 to 10.50
Boston, dealers	6.50 to 7.00
Buffalo	11.75 to 12.25
Chicago	11.50 to 12.00
Cincinnati, deal.	10.00 to 10.50
Cleveland	11.50 to 12.00
Detroit	9.00 to 9.25
Eastern Pa.	11.50
Eastern Pa., chem.	14.50 to 15.00
New York, deal.	7.00 to 7.50
Pittsburgh	12.00 to 12.50
St. Louis	10.00 to 10.50
PIPE AND FLUES	
Cincinnati, deal.	9.00 to 9.50
RAILROAD GRATE BARS	
Buffalo	13.50 to 14.00
Chicago, net	12.50 to 13.00
Cincinnati	10.00 to 10.50
Eastern Pa.	13.00 to 13.50
New York, deal.	9.25 to 9.75
St. Louis	13.00 to 13.50
FORGE FLASHINGS	
Boston, dealers	10.25 to 10.50
Buffalo	13.75 to 14.25
Chicago	10.50 to 11.00
Cleve., over 10 in.	13.00 to 13.50
Detroit	12.50 to 12.75
Pittsburgh (light)	15.00 to 15.50
FORGE SCRAP	
Boston, dealers	9.00 to 9.50
Chicago	18.50 to 19.00
Eastern Pa.	13.00 to 14.00
ARCH BARS AND TRANSOMS	
Chicago, net	21.50 to 22.00
St. Louis	22.00 to 22.50

Iron, Steel Works Scrap

AXLE TURNINGS	
Boston, deal	6.75 to 7.00
Buffalo	14.00 to 14.50
Chicago	13.00 to 13.50
Cleveland	12.50 to 13.00
Eastern Pa.	15.00
Pittsburgh	15.50 to 16.00
St. Louis	12.00 to 12.50
STEEL CAR AXLES	
Birmingham	16.00 to 17.00
Boston, ship point	16.00 to 16.50
Buffalo	19.00 to 20.00
Chicago	18.00 to 18.50
Eastern Pa.	23.00 to 23.50
Pittsburgh	21.50 to 22.00
St. Louis	20.50 to 21.00
SHAFTING	
Boston, ship point	14.50 to 15.00
Chicago	17.35 to 17.90
Eastern Pa.	19.00 to 20.00
New York, deal.	15.00 to 15.50
St. Louis	18.50 to 19.00

Iron Foundry Scrap

CAR WHEELS	
Birmingham, iron	12.00 to 13.00
Boston, iron	14.00 to 14.50
Buffalo, iron	14.00 to 14.50
Buffalo, steel	18.50 to 19.50
Chicago, iron	14.50 to 15.00
Chi., rolled steel	19.00 to 19.50
Cincinnati	12.50 to 13.00
Eastern Pa., cast	17.00
Eastern Pa., rolled	19.00
N. Y., iron, deal.	12.50 to 13.00
Pittsburgh, iron	15.50 to 16.00
Pittsburgh, steel	20.00 to 20.50
St. Louis, iron	15.25 to 15.75
St. Louis, steel	18.00 to 18.50
No. 1 CAST SCRAP	
Birmingham, cup.	14.50 to 15.50
Buffalo	16.00 to 17.00
Boston, textile	13.50 to 14.50
Chicago, mach.	17.90 to 18.50
Chicago, railroad	17.90 to 18.50
Chicago, agri.	16.25 to 16.80
Cincinnati, mach. cupolas, gross	19.50 to 20.00
Cleveland, cupola	16.50 to 17.00
Detroit, net	13.00 to 13.50
East. Pa., cupola	16.00 to 17.50
N. Y., cup., deal.	13.00 to 13.50
N. Y., del. local foundries	17.00 to 17.50
Pittsburgh, cupola	14.00 to 14.50
San. Fran., del.	13.50 to 14.00
Seattle	16.00 to 16.25
St. L. No. 1 mach.	16.00 to 16.50
St. Louis, No. 1	15.00 to 15.50
Valleys	16.50 to 17.00
HEAVY CAST	
Boston	10.50 to 11.00
Buffalo, breakable	13.00 to 13.50
Cleve., breakable	12.50 to 12.75
Detroit, auto., net	18.00 to 18.50
Detroit, breakable	10.00 to 10.50
Eastern Pa.	16.00 to 16.50
New York, deal	11.75 to 12.50
Pittsburgh	13.00 to 13.50
MALLEABLE	
Boston, railroad	16.50 to 17.00
Buffalo	17.50 to 18.50
Chicago, agri.	15.50 to 16.00
Chicago, railroad	19.00 to 19.50
Cinn., R. R., deal.	15.25 to 15.75
Cinn., agri., deal.	14.25 to 14.75
Cleveland, rail	16.00 to 16.50
Detroit, auto	14.00 to 14.50
St. Louis, rail	16.25 to 16.75

Miscellaneous Scrap

RAILS FOR ROLLING	
5 feet and over	
Birmingham	13.00 to 14.00
Boston, dealers	12.25 to 12.50
Rails scrap, Boston	11.00 to 12.00
Skeleton, Boston	9.00 to 9.50
Buffalo	16.00 to 16.50
Chicago	17.50 to 18.00
Eastern Pa.	18.00 to 18.50
New York	14.00 to 14.50
Pittsburgh district	18.50 to 19.00
St. Louis	16.00 to 16.50
LOCOMOTIVE TIRES	
Chicago, cut	19.00 to 19.50
St. Louis, No. 1	15.50 to 16.00
LOW PHOS. PUNCHINGS	
Chicago	17.50 to 18.00
Pittsburgh	20.00 to 20.50

strengthen and are holding for better prices. Steel axles are lower and other grades are firm.

New York, Feb. 26.—Approximately 10,000 tons of No. 1 railroad steel has been purchased by Lukens Steel Co., Coatesville, Pa., at $16.50, delivered. Worth Steel Co., Claymont, Del., is reported to have purchased around 2500 tons at the same price. Buying otherwise is spotty with the local scrap dealers' market weak. Dealers are now paying no more than $6.50, New York, for mixed borings and turnings, and $9, New York, for stove plate for foundry consumption. This latter is a reduction of 50 cents a ton. They have also marked down their inside price on heavy breakable cast, the market prevailing at $11.75 to $12.50, New York. A Pottsville, Pa., consumer has paid $12.25, delivered, for yard steel, although the tonnage involved is said to be relatively light.

Philadelphia, Feb. 26.—Following some heavy sales of No. 1 melting steel at $16, delivered, the scrap market here is featured by scattered sales with some grades slightly easier.

Buffalo, Feb. 26.—A Buffalo jobber announces the sale of "a good sized tonnage" of No. 1 heavy melting steel to a large consumer at $16.50, which is $1.50 under the last tonnage contract price and $1 under a former open offer for material. Dealers who hold contracts made at $17.50 to $18 have recently reported they cannot buy under $17 for application on these orders, making the new sale all the more puzzling. Some No. 2 will be taken if material on the new contract does not grade strictly No. 1, it is said, which may account partly for the lower price.

Pittsburgh, Feb. 26.—Iron and steel scrap continues quiet with mill buying still absent. Dealers are buying small tonnages to piece out recent orders but are not active in soliciting new business. Some strength is developing in steel specialties with a slightly improved demand accompanied by lack of material. Heavy melting steel and blast furnace grades continue at former prices although nominal to a certain extent because of lack of consumer buying.

Cleveland, Feb. 26.—While scrap shipments are heavy against orders, little fresh buying is being done by consumers. Dealers continue to buy to fill commitments and based on these transactions, quotations show strength. Heavy melting steel is $15.75 to $16. The last sales of blast furnace material were at a minimum of $11.25.

Detroit, Feb. 26.—Iron and steel scrap prices continue in a process of liquidation, with some important short interests still active. A majority of factors point to further recessions in prices. An unusual volume of material is coming out of Detroit automotive plants, not only on regular lists but also on supplementary ones. Pittsburgh and Youngstown district buyers of scrap are rejecting much material. With water shipment shut off, outlets for this unusual production of scrap here are restricted. Sheet clippings and machine shop turnings each have been marked down another 25 cents.

Cincinnati, Feb. 26.—The scrap market area has been quiet although there is some buying, but no tonnage is reported. There is a reported surplus in borings and machine shop turnings.

St. Louis, Feb. 26.—After holding for a considerable time around the highest levels since the war, iron and steel scrap has turned downward. Of 29 items enumerated in the local dealers' list, eighteen have been subjected to specific cuts, ranging from 25.00c to $1 per ton, and the tone throughout is easier. While the weakness is due chiefly to sympathetic action with other centers, there are other factors. Dealers are selling freely at lower prices than would have moved the same material shortly before. Users are taking advantage of this and are lowering their bids.

Birmingham, Ala., Feb. 26.—Large melters of heavy melting steel are buying only against early needs, with $12.50 paid for best quality. Prices are unchanged but show weakness.

Toronto, Ont., Feb. 26.—Except for a steadily increasing demand the iron and steel scrap market is unchanged. Current business is mostly confined to spot orders, but tonnages are fairly larger. Dealers are not encouraging business on long term contracts, owing to difficulty in securing supplies. Scrap prices are strong but without change.

Semifinished Steel

Sheet Bars, Billets and Slabs Advanced $1 for Second Quarter

SEMIFINISHED STEEL PRICES, PAGE 604

Pittsburgh, Feb. 26.—Billets, sheet bars and slabs have been advanced $1 a ton by leading producers. This brings current quotations on 4 x 4-inch rerolling billets and equivalent area slabs to $34, with smaller size billets $1 higher and sheet bars $35, plus usual chemical extras. Ordinarily such advances would find little application until the expiration of current contracts, but a shortage of billets and sheet bars has been apparent for a number of weeks and consumers have been forced to go to producers other than their regular source of supply. Some mills are in the market seeking tonnage to apply against their regular contract requirements. The new prices will apply on second quarter contracts, although to date there has been little activity for that period. Despite the fact the spot market has been active from the standpoint of inquiry, sales have not matched demand due to the fact a number of mills are out of the market.

Youngstown, O., Feb. 26.—So heavy has become local demand for sheet bars, billets and slabs that following the recent advance of $1 a ton in price, premiums are being hinted at in some instances. Not all the bar, sheet and other finishing mills, aside from pipe, are operating this week among the independents, due to lack of semifinished steel. Subsidiary mills of important steelmakers are in no better position than others. Cleveland mills are shipping important tonnages of semifinished steel into the valleys, thus helping local mills to keep operating. Prices now are $34, Pittsburgh and Youngstown, for billets and slabs, and $35, same bases, for sheet bars.

Cleveland, Feb. 26.—Demand for sheet bars, billets and slabs continues strong, the leading independent producer here operating all of its 14 open hearths, and deferring deliveries more than two weeks after receipt of specifications. Increased requirements of regular customers are being given preference. Some material has been shipped into the valley district recently to accommodate users unable to procure necessary tonnage there. Prices have been advanced $1 a ton, effective immediately on all new business for the remainder of the first quarter, and for the second quarter. Sheet bars now are $35, Cleveland or Youngstown, 4 x 4-inch billets and slabs $34, and smaller billets $35.

Chicago, Feb. 26.—Specifications on semifinished material are to the limit of contract obligations. Prices are unchanged at $35, Chicago, for rerolling or commercial billets, 4 x 4-inch base, and the same price for sheet bars. Notable activity is reported in wire rods, as in all semifinished material. Sales are reported at $43, Chicago.

Canadian Scrap

Dealers' Buying Prices

MONTREAL

Per Gross Tons

Iron axles	$22.00
Steel axles	20.00
Car wheels	16.00
Stove plate	13.00
Wrought pipe	6.00
Turnings	6.50
Heavy melting steel	8.00

TORONTO

Steel axles	14.00
Iron axles	16.00
Heavy melting steel	9.50
Turnings	7.00
No. 1 mach. cast (net)	15.00
Malleable (net)	13.00

Opens Engineer's Office

John Lesh, president of the Forest City Structural Steel Co., Cleveland, since March, 1925, which company has discontinued operations, has established headquarters in the Union Trust building, Cleveland, as consulting engineer. Prior to becoming president of the Forest City company, Mr. Lesh was vice president and general manager of the Riverside Bridge Co., Martins Ferry, O., for 15 years. When that company was absorbed by the J. E. Moss Iron Works, Wheeling, W. Va., in February, 1924, Mr. Lesh became vice president of the consolidated companies, leaving that position to organize the Forest City company.

National Metal Trades association will hold its next convention, April 24-25, at the Drake hotel, Chicago.

Bars

Demand and Production Continue at High Point—Test of New Prices Is Near

CHICAGO mills continue to produce bars at capacity but are unable to reduce delivery delays, now six to eight weeks. Buyers in need are taking warehouse delivery in some cases. At Pittsburgh deliveries are four weeks deferred. Advanced prices will face test soon as March 15 marks expiration of first quarter contracts. All classes of consumers are asking deliveries.

BAR PRICES, PAGE 603

Chicago, Feb. 26.—With further extension of shipments and continued capacity output in bars and like products, buyers are concerning themselves more with ordering against anticipated needs than for some weeks. Second quarter bookings necessarily are being taken, as negligible accommodation can be given buyers for the remainder of first quarter. Bar deliveries have been lengthened to six or eight weeks for some sections. Sales of bars and other finished material in the week just closed ranked second for this year, and fourth in the past two years. February shipments may show a record for that month. With specifications far ahead of production, actual mill orders surpass the average week in 1928 by a wide margin. Prospects of the Ford Motor Co. buying more steel in the open market when the 7500-car daily program gets under way March 1, and other increased automotive output, indicate further crowding of order books. Car shops are taking more bar products, and other bar mill customers, including implement and tractor builders, cold finishers and drop forgers, have heavy programs. Consumers of mixed carload and odd-lot material apparently are showing some indifference to prices when early delivery is coveted, many turning to warehouses after inability to get early scheduling at the mills.

The newly advanced quotations of 2.05c to 2.15c, coming in the midst of the quarter, are not being tested rigidly on present rollings, although outstanding quotations at the time of the price announcement were withdrawn, and occasional miscellaneous tonnage is being placed at 2.05c and 2.10c. Eastern producers, equalizing prices, are taking tonnage at western consuming points.

New York, Feb. 26.—Although not quite as active as in January, current bar specifications are at a brisk rate. Consumption is heavy and there appears no basis for expecting a decline. All bar mills now are quoting 1.95c, base, Pittsburgh, as a minimum price on new business and the current range is 1.95c to 2.05c, base, Pittsburgh.

Buffalo, Feb. 26.—The minimum base on bars is now said to be 2.05c, Lackawanna, for second quarter, with 2.10c asked on ordinary tonnage.

Pittsburgh, Feb. 26.—Steady specifications and mill operations continue to mark hot-rolled bars. The recent advance of $1 a ton which has been generally adopted has not served to drive in anticipatory orders although this is looked for before the expiration of first quarter contracts March 15. Most mills are booked for several weeks ahead, with delivery on smaller sizes of bars running four weeks or more. Demand still is diversified.

Detroit, Feb. 26.—Soft steel bars are coming into the Detroit district, principally to automotive users, at a record rate. Demand for alloy steel and for forging bars is on a commensurate basis. The outlook is that this high demand will carry at least through March. Consumers have no stocks and are pressing for speedy delivery. Most users having been covered well for the first quarter, the recent advance of $1 per ton will have little effect on invoices for this quarter. On new business sellers are quoting the advanced level of 1.95c, Pittsburgh. Contracting for second quarter is not yet under way but it is understood 1.95c will be quoted for this delivery.

Cleveland, Feb. 26.—Outside mills sold as a rule 10 to 15 per cent more bars in February than in January. Probably 80 per cent of this tonnage is for automotive and allied lines. Delivery has receded farther, although no serious inconvenience has yet accrued to consumers. Cleveland mills are quoting 1.95c, base, Cleveland, while outside mills quote 2.00c, delivered Cleveland.

Dayton Malleable Iron Co., Dayton, O., has resumed on automobile axles after being idle two years.

Plates

Market Active—Prices Strong—Substantial Tonnages Placed for Cars, Tanks, Pipe Lines, Barges

PLATE demand is more active, with deliveries deferred several weeks. Mills in the Chicago district continue operating at capacity. Specifications from car builders in that district average 10,000 to 15,000 tons a week. Among awards are 4500 tons for a Youngstown water system and 3000 tons for barges. Additional business is being booked for second quarter.

PLATE PRICES, PAGE 603

Pittsburgh, Feb. 26.—Plate specifications are more active, stimulated in a measure by the heavier requirements of railroad equipment builders. Demand for miscellaneous needs also is slightly heavier. The Dravo Contracting Co. was the successful bidder for 25 steel barges requiring 3000 tons of plates and shapes for the Memphis office of the United States engineers. Second quarter contracting for plates is not under way. Plates generally are quoted 1.95c, all producers having followed the $1 a ton advance announced a week ago by the Carnegie Steel Co. Pending inquiries for river barges, it is estimated, will require about 10,000 tons of plates.

New York, Feb. 26.—Plate orders are somewhat smaller than in recent weeks. Some consumers have sought to have mills take their contracts for second quarter at the old prices, but so far as known the mills are refusing. The new minimum figure of 2.05c, base, Coatesville, has been obtained on a number of sales. At the same time, consumers generally are protected at the old price of 2.00c for first quarter. The Erie railroad's approval of its 1929 budget, with 2500 freight cars included, means that 40,000 to 50,000 tons of plates, shapes and bars will be needed for cars for this road this year. Considerable plate tonnage also will be required for the Erie's marine program for this year, which includes four carfloats and 35 lighters.

Cleveland, Feb. 26.—Small and medium size orders for plates are filling up mill books and deliveries usually are deferred two or three weeks. One local mill sometimes can ship earlier. Plates are firm at 1.95c, Pittsburgh, and on some extra small lots, 2.00c has been quoted. It is indicated that the latter level may be the price for early second quarter. The contract for the 5-mile line of 36-inch forcemains from the Meander dam site to Youngstown, O., taking 4500 tons, was awarded the Penstock Construction Co., subsidiary of the Petroleum Iron Works, Sharon, Pa. Plates probably will be rolled by Carnegie Steel Co.

Chicago, Feb. 26.—More tonnage is being entered steadily on the heavy order books of mills. Specifications from car builders have by no means reached their peak at 10,000 to 15,000 tons weekly. One plate producer booked 2000 tons of storage tank

plates and another 11,000 tons, both for the West and Southwest. Concrete pipe will be used for the Denver water line, which it was expected might call for about 12,000 tons of electrically welded pipe. A 73-mile gas line is being projected from Saginaw, Mo., to Gallaway, Mo. Plate deliveries are being further extended even with all capacity in the district engaged at a top mark. Mills are taking second quarter tonnage whenever it is offered without having made formal announcement of books being opened.

Philadelphia, Feb. 26.—Plate demand continues good with prices on new business ranging from 2.05c to 2.15c, base Coatesville, although most consumers are protected to the end of the first quarter at 2.00c to 2.10c, base, Coatesville.

CONTRACTS PLACED

4500 tons, 5-mile line of 36-inch force mains from Meander dam site to Youngstown, O., to Penstock Construction Co., subsidiary of Petroleum Iron Works. Plates probably rolled by Carnegie Steel Co.

3000 tons, plates and shapes, 25 steel barges for United States engineers, Memphis, Tenn.; to Dravo Contracting Co.

1936 tons, sheet piling, Long Beach, Calif., to Steel Inc.

1512 tons, 60-inch pipe, Denver, to Lock-Joint Pipe Co.

320 tons, 16 steel pontoons for United States engineers' office, Pittsburgh; to Cahrles Hegewald Co., New Albany, Ind.

150 tons, boiler and equipment for Rainier Pulp & Paper Co., Shelton, Wash., to Puget Sound Machinery Depot.

CONTRACTS PENDING

9000 tons, two gas holders for Pacific Gas & Electric Co., San Francisco; bids being received.

280 tons, 14 pontoons for United States engineers, Louisville, Ky., office; bids opened March 1.

120 tons, 12 to 16-inch welded steel pipe, Upland, Calif. Los Angeles Mfg. Co. low bidder.

Will Remodel Furnace

Contracts for the ironwork involved in the remodeling of Y-furnace of the Wickwire-Spencer Steel Co., Buffalo have been let to the Lackawanna Steel Construction Corp., Buffalo. The work includes the erection of a vortex cleaner to be furnished by H. A. Brassert & Co., Chicago; jacking up the skip incline; four walkways around the lower part of the stack; and the rebuilding of a gas washer. The erection work will be under the supervision of R. R. Hetz, Cleveland, formerly erection superintendent, Variety Iron Works of that city.

Hann Elected a Director

Pittsburgh, Feb. 26.—George R. Hann, attorney and president of the Pittsburgh Aviation Industries Corp., was elected director of the Mackintosh-Hemphill Co. to succeed John W. Chalfant, resigned, at the annual meeting Feb. 25.

Pipe

Preferential Discounts on Steel Pipe Fast Disappearing—Cast Pipe Inquiries, Orders Growing

REMOVAL of preferential discounts for steel pipe jobbing accounts is scheduled to be complete by April 1. Line pipe totaling 10,000 tons has been awarded for a Standard Oil subsidiary. The Youngstown, O., water line project, taking 4500 tons, is placed with a Sharon, Pa., interest. A Detroit project is postponed. Cast pipe activity revives as spring advances.

PIPE PRICES, PAGE 604

New York, Feb. 26.—Cast pipe demand continues to develop slowly. Inquiries are scattered and orders light. Possibly one of the larger awards is for gas pipe for the Brooklyn Union Gas Co. It had one inquiry pending for 1300 tons but the extent of its recent purchase is not definitely established. The United Gas Improvement Corp.'s inquiry for 9000 tons still is pending.

Merchant pipe mills reflect a much firmer disposition with reference to prices than has been the case for years. Some jobbers who handle large tonnages annually have been advised that differentials from the regular price which they have been enjoying will be eliminated and that they will have to pay the full price after April 1. In some circles this firmer attitude by the mills is regarded as likely to set up a more satisfactory condition from the standpoint of the jobbers. The differentials allowed in the past have varied widely with the result that at times exceedingly low prices have been named on certain blocks of merchant business.

The Standard Oil Co. of New Jersey is a large factor in line pipe at present. It has just placed 10,000 tons of 8-inch with one of the largest producers for one of its middle western subsidiaries. This company now has an inquiry out for about 40,000 tons of gas line pipe.

Pittsburgh, Feb. 26.—Recent spotty conditions in demand for tubular products continue with welded material lagging behind seamless products. Jobbers are turning over their stocks of merchant pipe in fair volume but continue to order only as needed. Seamless pipe demand from the oil country is steady and recent activity in mechanical tubing continues. Early closing on the large gas pipe line to be laid by the Mississippi Fuel Corp. from Monroe, La., to St. Louis is expected.

Youngstown, O., Feb. 26.—The Mahoning valley sanitary sewer district has awarded to the Penstock Construction Co., subsidiary of the Petroleum Iron Works, Sharon, Pa., contract for 36-inch force mains, five miles long, from Meander dam to Youngstown. Its bid was $583,053 on smooth bore steel pipe, electrically welded. About 4500 tons of 5/16-inch plates will be required.

Cleveland, Feb. 26.—While most buttweld pipe orders from jobbers can be shipped out of mill stocks immediately, the lapweld situation is tighter. Deliveries are deferred two to four or more weeks. Jobber demand is increasing for the former for the purpose of building up spring stocks. Prices show a tendency to firm up. Sellers do not now find it necessary to resort to giving an extra 2½ per cent discount, as formerly.

Chicago, Feb. 26.—Prospects for pipe programs improve daily. Inquiries took a decided upturn, after weeks of lethargy. Bloomington, Ill., will take bids on 10 miles of 24-inch cast iron, concrete or steel pipe to connect the city with a waterworks reservoir. Bids closed yesterday on 97,000 feet of 6 to 12-inch pipe for Roseville, Mich., and this municipality takes bids, March 12, on 84,000 feet of 6 to 8-inch pipe. South Bend, Ind., closed on 1000 tons of 6, 8 and 12-inch pipe. Rockford, Ill., has taken bids for an unstated tonnage, open specifications, of 6 to 24-inch. Prices for centrifugal pipe, which have shown some weakness recently, have stiffened to within 10 to 15 per cent of sand cast pipe prices on a per foot basis, and more on a tonnage basis. Chicago delivered prices for carlot orders of the larger diameters hold steadily at $45.20 to $46.20.

Birmingham, Ala., Feb. 26.—Increased production of cast iron pressure pipe is apparent and this condition possibly will improve from now on for several weeks. The $37 to $38 on 6-inch and over sizes is firm.

Detroit, Feb. 26.—Bids on several thousand tons of pipe for the city have been thrown out and the project will be re-advertised.

CONTRACTS PLACED

CAST PIPE

1500 tons, 6, 8 and 10-inch centrifugal monocast, Normandy park water system, near Seattle, to American Cast Iron Pipe Co.

1140 tons, 12-inch class 350 pipe, Los Angeles, to American Cast Iron Pipe Co.

1084 tons, 2 to 12-inch class 150 and B pipe, Los Angeles, allocated as follows: 195 tons, 10 and 12-inch class B to American Cast Iron Pipe Co.; 182 tons 8-inch class 150 to United States Cast Iron Pipe & Foundry Co. and 707 tons of 2 to 6-inch class 150 to Pacific States Cast Iron Pipe Co.

1000 tons, 6, 8 and 12-inch pipe for South Bend, Ind., to unstated fabricator.

570 tons, 12-inch class 350, Los Angeles, to Pa-

cific States Cast Iron Pipe Co.
350 tons, 10-inch monocast, Tacoma, Wash., to American Cast Iron Pipe Co.
250 tons, 6-inch monocast, Vancouver, B. C., to American Cast Iron Pipe Co.
200 tons, 8 to 12-inch monocast, Spokane, Wash., to American Cast Iron Pipe Co.
200 tons, 10 to 14-inch class A, South Orange, N. J., to Herbert Kennedy & Co., representing French makers, at $36.70, delivered, a ton.
150 tons, 6 to 8-inch, monocast, Puyallup, Wash., to American Cast Iron Pipe Co.
Unstated tonnage, Brooklyn Union Gas Co., Brooklyn, to United States Cast Iron Pipe & Foundry Co. This consumer had one inquiry pending for 1300 tons, as previously noted.

STEEL PIPE

10,000 tons 2-inch line pipe for a middle western subsidiary of the Standard Oil Co. of New Jersey, to unstated interest. About 40,000 tons yet to be purchased.
4500 tons, 36-inch pipe for force mains from Meander dam to Youngstown, O., to Penstock Construction Co., subsidiary of Petroleum Iron Works.

CONTRACTS PENDING

CAST PIPE

1400 tons, 6 to 16-inch class C, Mamaroneck, N. Y.; contractors' bids open March 1.
1350 tons, 2 to 10-inch class B, Lomita district No. 13, Los Angeles, Pacific States Cast Iron Pipe Co. low bidder.
440 tons, 6 to 12-inch class B and C, improvement, Thirty-first avenue, south, Seattle; Argentieri & Colorossi low bidders.
338 tons, 4 to 12-inch class B, Anaheim, Calif. American Cast Iron Pipe Co. low bidder.
330 tons, 4, 6 and 8-inch class B, Medford, Mass.; Herbert Kennedy & Co., representing French maker, low bidder.
330 tons, 4, 6 and 8-inch class B, Medford, Mass.
250 tons, class B, with alternate on centrifugal, Madison, N. J.; bids opened Feb. 25.
250 tons, water pipe in connection with subway development, New York; new specifications to be issued by department of water supply, gas and electricity.
250 tons, 6 to 16-inch class C, Gardner, Mass.
247 tons, 12-inch class B, Glendora, Calif.; bids opened.
231 tons, 4 and 6-inch class B, improvement Massachusetts avenue, San Diego, Calif. R. E. Hazard Contracting Co. low bidder.
215 tons, 4 and 6-inch class C, improvement, El Prado avenue, San Diego, Calif. Bids Feb. 25.
200 tons, 10 to 14-inch class A, South Orange, N. J.
144 tons, 4 and 6-inch class B, improvement, Plata avenue, San Diego, Calif.; bids Feb. 25.
140 tons, 8 to 12-inch class B, Montclair, N. J.
10 miles of 24-inch cast, concrete, or steel pipe for Bloomington, Ill.; bids March 5.
97,000 feet, 60,000 feet of 6-inch, 30,000 feet of 8-inch and 7000 feet of 12-inch pipe for Roseville, Mich.; bids Feb. 25.
84,000 feet, 30,000 feet of 8-inch, and 54,000 feet of 6-inch pipe for Roseville, Mich.; bids March 12.
Unstated tonnage, open specifications, 6 to 12-inch pipe for Rockford, Ill.; bids in.

Tin Plate

Production Reduced Slightly—Outlook Bright for New Season

TIN PLATE PRICES, PAGE 603

Pittsburgh, Feb. 26.—Tin plate operations in this district are closer to 85 per cent than the 90 per cent rate which prevailed several weeks ago. This results from the large tonnage produced during the latter part of last year in anticipation of spring requirements. Reports indicate the carry over of several of the large vegetable packs will be the smallest in years.

Sheets

Orders Continue Crowding on Mill Books—Majority of Producers on Higher Price Basis

NEW orders continue to keep sheet mills operating at top speed, while in some districts deliveries are reported further deferred. Additional producers, including the leading interest, have advanced prices $2 a ton on practically all grades except full finished, for all new business. Consumers generally are covered for first quarter at former levels.

SHEET PRICES, PAGE 603

Pittsburgh, Feb. 26.—Additional producers, including the American Sheet & Tin Plate Co., have announced an advance of $2 a ton on black, blue annealed, galvanized and furniture sheets, following the lead of two independents. This brings new prices to 2.95c, base, Pittsburgh, on black sheets, 3.70c on galvanized, and 2.20c on blue annealed. Tin mill black continues at 3.00c, and autobody at 4.10c. The increases go in effect immediately. Shading of the 3.60c galvanized price noted a short time ago generally has disappeared. Specifications for all grades of sheets are well maintained. Although operations in the district continue close to 95 per cent, consumers still are having difficulty obtaining desired shipments. Delivery varies from two to three weeks on blue annealed, to six or seven weeks on full finished. The fact most mills are well booked for remainder of the quarter eliminates to a large extent possibilities of heavier specifications against first quarter contracts for the purpose of escaping higher prices. Demand for normalized sheets is extending delivery on full finished, particularly on automotive orders.

Philadelphia, Feb. 26.—The leading interest now is quoting a $2 advance on sheets, effective immediately on new business, and the majority of independents are on the higher level. No test of the new prices is expected until the approach of second quarter, because consumers are protected until April 1 at the former prices.

Youngstown, O., Feb. 26.—Sheet mills here are scheduled many weeks ahead on specifications, and delivery dates have replaced quotations in buyer-seller discussions. The advanced prices of $2 a ton on the common grades appear to be accepted, if the buyer can obtain a favorable place on rolling schedules. Full-finished makers are not accepting new business for earlier than the last week in April in some instances, while makers of common black are booked four to six weeks ahead. Manufacturers of furniture sheets have advanced $2 a ton to bases of 4.10c for A grade and 3.90c for B grade, Pittsburgh. Autobody sheets continue 4.10c. Common black is firm at 2.95c, Pittsburgh, galvanized at 3.70c and blue annealed at 2.20c.

Cleveland, Feb. 26.—Sheet deliveries are becoming more deferred. On some extra deep drawing stock, one Ohio maker now is naming the week ending June 8. The automotive industry is consuming huge quantities, and orders recently placed at 4.10c, base, Pittsburgh, involve from 300 to 12,000 tons each. More Ohio makers are advancing black sheet prices to 2.95c, Pittsburgh. Deliveries on this grade are four weeks off; galvanized five weeks and blue annealed three to six weeks. Full finished deliveries usually are four to six weeks or more.

Detroit, Feb. 26.—Emphasis in the sheet market continues upon deliveries rather than new contracts. With the exception of Buick and Chrysler, practically all sheet users in this district are taking unusually large tonnages, some of them record breaking. One important maker has issued a weekly schedule to its sources of supply and insists on car numbers by Tuesday on material scheduled for delivery that week. It is understood that the Ford Motor Co. is to buy the sheets required by its bodymakers. Full finished sheets are strong at 4.10c, Pittsburgh, or 4.39c, delivered Detroit. Galvanized are the weakest, with some recent reports of 3.50c, Pittsburgh, or 3.79c delivered Detroit. Black sheet for important tonnages are nominal at 2.85c, Pittsburgh, and blue at 2.10c, Pittsburgh. The $2 rise for second quarter has not become general and contract solicitation for that period is not under way.

Chicago, Feb. 26.—American Sheet & Tin Plate Co. and Inland Steel Co. have announced an advance of $2 a ton on sheets in this district. This follows similar action by Youngstown Sheet & Tube Co. and Republic Iron & Steel Co. Gary and Indiana Harbor mill prices now are 3.05c for No. 24 black; 3.80c for No. 24 galvanized; and 2.30c for No. 10 blue annealed, with prices $1 a ton higher than these figures for Chicago delivery. A marked increase is noted in sheet orders. Mills have good books, particularly for roofing material. Shipments of black, galvanized and blue annealed sheets now range from four to five weeks. Improvement in roofing demand is noted in all consuming districts. Some buyers are contracting for all or part of second quarter.

St. Louis, Feb. 26.—Producers and distributors of sheets in this district report business well up to expectations, and the first three weeks of February slightly above the average for the past half decade.

Structural Shapes

Live Pending Work Will Probably Overcome 100,000-Ton Handicap to Date—Start Made as 50,000-Ton Bridge Is Placed

BUILDING activity in different market centers appears well sustained. At any rate many owners seem bent on not only taking advantage of the continued competitive market but also in obtaining as early delivery dates as possible on fabricated material. Several large pending projects scheduled for closing within a month or two will go far toward bringing the total awards for the first half up to the aggregate for the comparable period a year ago. So far they lag behind about 100,000 tons. A 50-story office building in New York will take 13,000 tons instead of 10,000 as noted last week. Several jobs let in that section require 1000 to 5300 tons apiece. A 4500-ton bridge was let at Chicago. A 50,000-ton bridge is reported let to the American Bridge Co.

STRUCTURAL SHAPE PRICES, PAGE 603

Chicago, Feb. 26.—Despite such adverse conditions as continued cold weather and tightening of credit in speculative building, structural steel inquiry is moderately heavy. Inquiries totaled about 6500 tons and awards over 4000 tons. Steady specifications from car builders tend to effect a better relative balance as to light and heavy structural schedules. Second quarter business is being booked and deliveries are slightly more extended. Mills are booked from 15 to 30 days ahead on plain material, but the situation is less tight than in plates and bars, bookings for which extend nearly to May 1. Most of the plain material now is moving on the basis of 2.00c to 2.10c, Chicago, with the usual quantity differentials, although some miscellaneous orders have been closed at the recently advanced prices.

Boston, Feb. 26.—Between 600 and 700 tons was awarded in this district the past week. Some odd lot tonnages bring the full tonnage somewhat higher. Prices are firm. The new high school building at Brighton takes 300 tons and 273 tons will be needed in stores at Quincy, Mass., while an indoor tennis court at Brookline, Mass., requiries 110 tons.

New York, Feb. 26.—Placing of 5000, 3930 and 3000 tons, respectively, for three buildings here is a feature of the local structural market. Inquiry continues to show some improvement, although few outstanding tonnages are noted. School work is further augmented by two projects, requiring 2000 and 1600 tons, respectively. Shapes continue strong at 2.145c to 2.195c, New York, on the general run of business, with fabricated material prices showing more strength than at any time this year.

Pittsburgh, Feb. 26.—The Chesapeake & Ohio railroad has awarded general contracts for plant construction at Huntington, W. Va., and Russell, Ky., involving 8300 tons of shapes. Steel for the latter shop, 4000 tons, was awarded the McClintic-Marshall Co. Specifications for plain shapes are well maintained and some improvement is noted in inquiry for fabricated material. Awards in this district expand slowly, being generally restricted to small tonnages. Inquiries, however, are more numerous but second quarter contracting for shapes is slow to get under way. Producers now are quoting 1.95c, Pittsburgh, for plain material.

Philadelphia, Feb. 26.—Structural shape price situation shows a somewhat firmer tendency in some directions but on the whole, current level is not much changed. An effort is being made in some directions to adhere to 2.00c mill as a minimum but lower prices have not disappeared. The Chesapeake bay bridge, taking 50,000 tons is reported let to the American Bridge Co.

Cleveland, Feb. 26.—More activity than in the past two weeks has characterized the structural shape market. The Glenn L. Martin Co. let the steel for its plant near Baltimore, 1550 tons, to McClintic-Marshall Co. National Iron & Wire Co. received the 700-ton award for the East Cleveland, high school and the contract for 970 tons for three bridges for the Nickel Plate railroad here went to Mt. Vernon Bridge Co. The 1970-ton lot for the Ohio Bell Telephone Co. building at Akron, O., will probably be let this week by W. J. Schrimer & Co., general contractors. Raw material shows a tendency to firm up at the 1.95c, Pittsburgh price, as mills work out of lower-priced arrangements. Deliveries of shapes usually are three or four weeks deferred.

Awards Compared

	Tons
Awards this week	84,439
Awards last week	21,498
Awards two weeks ago	38,903
Awards this week in 1928	38,585
Average weekly awards, Feb.	45,861
Average weekly awards, 1928	39,082
Average weekly awards, 1929	39,039
Total awards to date, 1928	416,813
Total awards to date, 1929	351,359

CONTRACTS PLACED

50,000 tons, Chesapeake bay bridge reported awarded American Bridge Co.

5290 tons, Bricker loft building, Broadway and East Forty-first street, New York, to Hay Foundry & Iron Works.

4500 tons, South Damon avenue bridge, Chicago, understood awarded to American Bridge Co. by Great Lakes Dredge & Dock Co., general contractor.

4000 tons, freight car shops, Russell, Ky., for Chesapeake & Ohio railroad; to McClintic-Marshall Co., through Hughes-Foulkrod Co.

3930 tons, Lefcourt building, Madison avenue and Forty-first street, New York, to A. E. Norton Inc.

3000 tons, loft, Northwest corner of Eighth avenue and Thirty-fifth street, New York, to Hedden Iron Construction Co.

2894 tons, loft building, Eighth avenue and Thirty-fifth street, New York, to Hay Foundry & Iron Works.

2500 tons, mill building, Interstate Iron & Steel Co., South Chicago, Ill., to unstated fabricator.

1550 tons, aircraft factory at Middle River, Md., near Baltimore, for the Glenn L. Martin Co., Cleveland, to McClintic-Marshall Co.

1400 tons, tramway bridge, Lake avenue, Duluth, to Kansas City Bridge Co.

1200 tons, Atheneum club, Chicago, to Gage Structural Steel Co.

970 tons, three Nickel Plate railroad bridges, East Seventy-fifth street, East Eighty-ninth street and Buckeye road, Cleveland, to Mt. Vernon Bridge Co.

900 tons, Hastings dam, near Hastings, Minn., to Minneapolis Steel & Machinery Co.

827 tons, paper storage building, Consolidated Paper Co., Monroe, Mich., to Whitehead & Kales Co.

700 tons, high school, East Cleveland, O., to National Iron & Wire Co.

500 tons, building, 320 East Fifty-third street, New York, to McClintic-Marshall Co.

500 tons, apartment, 111 East Eighty-eighth street, New York, to George A. Just Co.

500 tons, building for Anaconda Copper Mining Co., at International, Utah, to Minneapolis Steel & Machinery Co.

400 tons, engineers' building, International Harvester Co., Fort Wayne, Ind., to McClintic-Marshall Co.

350 tons, club, at Sixth and Los Angeles, streets, Los Angeles, to McClintic-Marshall Co.

350 tons, office, Seventeenth street, Philadelphia, to American Bridge Co.

300 tons, Brighton high school building, Boston, to Boston Bridge Works Inc.

273 tons, stores, Quincy, Mass., to A. Piotti & Co.

270 tons, bridge, New York Central railroad, Melrose, N. Y., to McClintic-Marshall Co.

250 tons, forging plant, Jackson, Mich., to Guibert Steel Co., through Austin Co.

345 tons, plant addition, Rudolph Wurlitzer Co., North Tonawanda, N. Y., to Kellogg Structural Steel Co., through L. A. Harding Construction Co., Buffalo, general contractor.

180 tons, Charlotte, N. C., armory, to Southern Engineering Co.

150 tons, William Cullen Bryant school, Cleveland board of education, Cleveland, to National Iron & Wire Co.

110 tons, indoor tennis courts, Brookline country club, Brookline, Mass., to Boston Bridge Works.

CONTRACTS PENDING

13,000 tons, 50-story office, American Exchange-Irving Trust Co., 1 Wall street, New York; noted last week as involving 10,000 tons.

10,000 tons, office building, Pennsylvania railroad, Philadelphia. Bethlehem Steel Co., low bidder.
5000 tons, building, Western Electric Co., Baltimore.
5000 tons, estimated, Pierre hotel, Sixty-first street and Fifth avenue, New York.
4300 tons, locomotive shop improvements, Huntington, W. Va., for Chesapeake & Ohio railroad; United States Engineers & Constructors, Philadelphia, general contractors.
2200 tons, professional building and garage, San Antonio, Tex.
2000 tons, textile school for board of education on Eighteenth street, Manhattan, New York.
2000 tons, 20-story building for *Herald-Tribune*, West Forty-first street, New York.
1970 tons, exchange building, Ohio Bell Telephone Co., Akron, O., general contract to W. J. Schrimer & Co., Cleveland.
1600 tons, public school, Pacific street and Third avenue, Brooklyn, N. Y.
1500 tons, Hanover street bridge, Baltimore.
1000 tons, two theaters, Philadelphia. General contract to W. H. Lee.
1000 tons, building, Rundle Mfg. Co., Camden, N. J.
800 tons, National Bank building, San Antonio, Tex.
700 tons, Medical building, Oakland, Calif. Pacific Coast Engineering Co. low bidder.
500 tons, store and office building, Sixty-ninth and Ludlow streets, Philadelphia, Simon & Simon, architects, drawing plans.
500 tons, Bank of North Philadelphia. General contract to Nelson Pedley.
500 tons, store building for Marshall Field & Co., Oak Park, Ill.
250 tons, building, Lycoming Mfg. Co., Williamsport, Pa. General contract to C. D. File.
225 tons, bridge over Mad river, Sacramento, Calif.; bids March 13.
200 tons, Cooper school, West Nineteenth street and Marshfield avenue, and McCose school, Marquette avenue, Chicago.
175 tons, state highway bridge, Newark, N. J.
105 tons, bridge over Malheur river, Portland, Oreg.; bids March 8.
100 tons, Pennsylvania railroad bridge, Philadelphia.
100 tons, municipal bridge, Utica, N. Y.
100 tons, lawyers' club, 16-18 Vesey street, New York.
Unstated tonnage, office building on Waldorf-Astoria hotel site, Thirty-fourth street and Fifth avenue, New York; Schreve & Lamb, architects, have finished preliminary plans for submission to municipal board of appeals.

Berger Buys Van Dorn Furniture Division

The Berger Mfg. Co., Canton, O., subsidiary of the Central Alloy Steel Corp., has acquired the metal furniture division of the Van Dorn Iron Works Co., Cleveland. For the present, manufacturing and sales of the Van Dorn lines will be continued at Cleveland, according to S. S. French, president of the Berger company.

The purchase involved approximately $1,000,000, and it includes all of the Van Dorn metal furniture machinery, tools, and inventory in process. In addition, the Berger company has assumed all Van Dorn agency contracts. Of these there are 75 exclusive agents and 250 dealers.

The Van Dorn Iron Works Co. manufactures a complete line of metal furniture. The addition of these products to the line made by the Berger company will make the latter company one of the largest producers of metal furniture. The company also is an important manufacturer of metal lath, metal culverts, and many other fabricated metal products, totaling in all 4000 items.

"Acquisition of the Van Dorn line, with its equipment and sales organization, will strengthen Berger's position in the trade, and enable us to realize manufacturing and administrative economies," said President French.

Concrete Bars

Spring Outlook Brighter—Scattered Awards in 100 to 500-Ton Range Fairly Active

PESSIMISM in the Chicago territory where the concrete bar trade looks for a letdown this year from the buying rate of the first half of 1928 is more or less nullified by optimistic outlook on possibilities in other sections. Large tonnage projects seem destined to proceed to conclusion as soon as weather opens up. Awards and pending inquiries show growth.

REINFORCING BAR PRICES, PAGE 603

New York, Feb. 26.—More activity features the concrete reinforcing bar market. Several good sized tonnages have been placed and a brisk demand exists for small tonnages. In fact, demand for shipment out of local warehouse stocks is unusually heavy for this season. Some jobbers have difficulty in maintaining stocks. A number of large jobs are pending, many being slated for early action. The current market on stock shipments is firm at 2.85c to 3.25c, base, delivered locally, depending on the size of the tonnage, plus differentials to points immediately outside of this district. The market on mill shipment cut to length continues 2.25c, base, Pittsburgh, equivalent to 2.59c, delivered New York. The latter figure occasionally is shaded.

Chicago, Feb. 26.—Reinforcing bar jobs are more numerous. Smaller jobs predominate. Adverse weather continues to check pending projects. Indications are that tonnage for the first half, based on preliminary and active projects, will fall below the total of a year ago, when more than 55,000 tons in lots of 100 tons each and over was placed in the north central group of states during the first half. Rail steel fabricators quote 2.05c for lots of 100 tons and over, and billet bar fabricators are quoting a minimum of 2.35c.

Pittsburgh, Feb. 26.—Concrete bar specifications to mills are increasing following a dull period when bad weather restricted building operations. Distributors are adding to their stocks and orders are being received to apply against jobs closed a number of weeks ago. Awards in this district continue marked by small tonnages. Reinforcing bars continue 2.25c, Pittsburgh, for cut lengths and 2.00c for stock lengths.

Buffalo, Feb. 26.—A total of 40 miles of 20-foot concrete road will be laid in this county this year. This involves in excess of 1500 tons of reinforcing bars or welded mesh, according to individual specifications. In addition the state will award contracts for 88 miles of state highway in the four counties in this region, known as its fifth district. This will involve probably 3000 tons of reinforcing material.

Awards Compared

	Tons
Awards this week	**3,490**
Awards last week	**4,283**
Awards two weeks ago	**5,150**
Awards this week in 1928	**6,505**
Average weekly awards, Feb.	**4,716**
Average weekly awards, 1928	**6,189**
Average weekly awards, 1929	**6,156**
Total awards to date, 1928	**53,995**
Total awards to date, 1929	**55,303**

CONTRACTS PLACED

500 tons, hospital, Ninety-fifth street and California avenue, Chicago, to Calumet Steel Concrete Steel Co.
450 tons, carton plant, National Biscuit Co., Beacon, N. Y., to Concrete Steel Co., through John W. Cowper Co. Inc., Buffalo.
450 tons, board of trade building, Chicago, to Olney J. Dean & Co., reported previously as 400 tons to unstated fabricator.
400 tons, telephone building foundation, Albany, N. Y., to Jones & Laughlin Steel Corp., through Turner Construction Co.
350 tons, bridge work United States engineers, Milwaukee, to Kalman Steel Co.
330 tons, building, Interboro News Co., New York, to Jones & Laughlin Steel Corp., through Turner Construction Co.
250 tons, power house for New York & Pennsylvania Co. at Lock Haven, Pa., to Faitoute Iron & Steel Co., through John W. Ferguson Co.
250 tons, Broadway-Barry garage, Chicago, to Co.
250 tons, Spring-Summit apartment, Seattle, to Northwest Steel Rolling Mills.
185 tons, building for Independent Pneumatic Tool Co., Aurora, Ill., to American System of Reinforcing.
150 tons, refinery, Gulf Refining Co., Philadelphia, to Philadelphia jobbers, thorugh Raymond Concrete Piling Co.
125 tons, building, Baldwin Locomotive Works, Eddystone, Pa., to Taylor-Davis, Inc.
100 tons, Charlotte, N. C., armory, to Southern Engineering Co.
100 tons, tunnel for Bush Terminal Co., Brooklyn, N. Y., to Concrete Steel Co.

CONTRACTS PENDING

600 tons, subway route 110, sections 1 and 2, Brooklyn, N. Y. Carlton Construction Co. low bidder.
400 tons, school at Central Islip, N. Y.; general contract to William Burbusse, Portchester, N. Y.
350 tons, building, Rundle Mfg. Co., Camden, N. J.
300 tons, building, Sears, Roebuck & Co., Washington.
300 tons, furniture merchandising building, Chicago.
175 tons, buildings for Lake Forest college, Lake Forest, Ill.
100 tons, school at Bronxville, N. Y.; general contract to William Bulbusse, Portchester, N. Y.
Unstated tonnage, two schools in Westchester county, New York; general contract to Johnson & Miller, Yonkers, N. Y.

Rails, Cars

First Quarter Car Awards May Outstrip All 1928—Chesapeake & Ohio Orders 2500

FIRST quarter car lettings probably will outdistance the 44,763 awarded in 12 months last year. Past week saw more than 3000 units added to carbuilders' books and active pending list is large. Locomotive interest grows as 32 are awarded and 51 are pending. Additional small rail business has been booked, together with attractive fastening tonnage.

RAILROAD TRACK PRICES, PAGE 604

Chicago, Feb. 26.—Rail tonnage is being added to schedules of rail mills here. A small Western road took out some tonnage in the past few days. Several miscellaneous lots were sold, totaling about 2000 tons.

About 6000 to 7000 tons of track fastenings were ordered out, the same as a week ago. Departments rolling this material are stepping up operations. Some roads buy track fastenings on a quarterly basis, and the bulk of track accessory business accompanying 1929 primary rail orders has been closed.

Estimates are that virtually 25,000 cars have been awarded by the railroads, not counting the numerous orders for car bodies, underframe units and partly assembled equipment. Car orders placed thus far closely approach the 44,763 ordered throughout all 1928. Of the car units awarded this year, more than 18,000 will be built in Chicago district shops. In addition, about 12,000 cars are pending in the West, including the St. Paul, Texas & Pacific, Northern Pacific and several odd-lot inquiries, including such items as 600 tank cars for the Union Tank Car Co. In addition, about 7000 railroad cars are being built for export this year.

New York, Feb. 26.—Featuring the local car market is the approval of a budget by the Erie railroad, providing for the purchase of 2500 heavy freight cars, 40 miscellaneous coaches and five power coaches, and 20 freight locomotives and 15 switch engines.

Pittsburgh, Feb. 26.—Occasional carload orders are being received for light rails, although the market is not active. The price continues steady at $36. Mills are fairly well engaged in production of fastenings to accompany recent new rail orders, although both new buying and demand for material for replacement purposes is slow. The Pressed Steel Car Co. has received an order from the Chesapake & Ohio railroad for 500 40-ton ventilated box cars.

CAR ORDERS PLACED

Andes Copper Mining Co., 10 flat cars, to Koppel Industrial Car & Equipment Co.
Atchison, Topeka & Santa Fe, two coaches to Pullman Car & Mfg. Corp.
Chicago & North Western, three parlor buffet cars to Pullman Car & Mfg. Corp.
Chesapeake & Ohio railroad, 2500 cars: 1500 hopper-bottom gondolas to American Car & Foundry Co., 500 same type to Richmond Car Works Co., and 500 ventilated 40-ton box cars to Pressed Steel Car Co.
Chicago, Milwaukee, St. Paul & Pacific, three combination baggage and mail cars to American Car & Foundry Co.
Illinois Central, 25 caboose cars, to American Car & Foundry Co.
Lehigh & Hudson River, one combination equipment car to Bethlehem Steel Co.
Lehigh Valley, 700 cars to Bethlehem Steel Co.
Minneapolis, St. Paul & Sault Ste. Marie, 400 box cars, 200 going to Pullman Car & Mfg. Corp. and 200 to Standard Steel Car Co.
Missouri-Kansas-Texas, 50 hopper cars, to Standard Steel Car Co.
Pere Marquette, 100 50-ton ballast cars, to Rodger Ballast Car Co.
Southern Manchurian, Dairen, Manchuria, 30 air dump cars, to Magor Car Corp.
Southern Pacific, 10 lounge cars and three observation cars, to Pullman Car & Mfg. Corp.
St. Louis & San Francisco, 300 underframes to Pullman Car & Mfg. Corp.
Wheeling & Lake Erie, 100 flat cars to Standard Steel Car Co.

LOCOMOTIVE ORDERS PLACED

Nevada Consolidated Copper Co., one locomotive, to American Locomotive Co.
South African railways, 32 locomotives distributed as follows: Six to Baldwin Locomotive Works, 13 to the North British Locomotive Co., Glasgow, Scotland; and 13 to the Henschell Co., of Germany.
Union Pacific railroad, 25 locomotives to American Locomotive Works.

CAR ORDERS PENDING

Baltimore & Ohio, 100 steel express cars, 15 combination baggage and mail, and 10 mail compartment cars.
Erie, 2500 freight cars, 40 miscellaneous coaches and five gasoline-electric cars, budget approved; freight cars include 1000 70-ton steel hopper cars, 500 steel automobile cars, 500 40-ton steel box cars, and 500 steel low side gondola cars; coaches include 30 steel suburban passenger cars and 10 steel express cars.
Northern Pacific, five mail express cars.
Royal State Railways of Siam, 51 bogie wagons, bids to be opened by superintendent of stores, Bancock, Siam, April 16; specifications available through Mr. Sandberg, 25 Broadway, New York.

LOCOMOTIVE ORDERS PENDING

Chicago, Milwaukee, St. Paul & Pacific, 10 locomotives.
Erie, 20 heavy freight locomotives and 15 heavy switch engines, budget approved.
Pere Marquette, 10 locomotives.
Royal State Railways of Siam, six Garrett locomotives, bids opened by superintendent of stores, Bangkok, Siam, May 14; plans obtainable through Mr. Sandberg, 25 Broadway, New York.
Southern Pacific, 16 locomotives.
Tientsin-Pukow, Tientsin, Hopei, China, 10 locomotives.

Buys New Mill Equipment

A 40-inch reversing blooming mill for the new plant of A. M. Byers Co. at Ambridge, Pa., will be built by the United Engineering & Foundry Co., Pittsburgh. The Byers company recently purchased a 46-inch universal plate mill, tables, and shears from the Morgan Engineering Co., Alliance, O.

Bolts, Nuts, Rivets

Specifications Holding at Steady Volume—New Price Is Applied

NUT AND BOLT PRICES, PAGE 604

Pittsburgh, Feb. 26.—Bolt and nut business is holding to about the January rate with specifications well diversified. Rivet demand is running ahead of January with better specifications from jobbers and railroad equipment builders. Although practically all tonnage is confined to contracts, occasional spot orders are being received on which the new price of 3.10c, Pittsburgh, on large rivets is being applied. Bolts and nuts continue 60 to 70 per cent off. Operations hold at 65 to 70 per cent.

Chicago, Feb. 26.—Writing contracts for second quarter may be started next week for bolts, nuts and rivets. So far as is known prices will remain unchanged except for the recent $4 advance in large structural rivets. Indications are that February specifications held closely to the volume of February, 1928. Bolts and nuts are 60 to 70 off, and structural rivets in carload lots now are quoted 3.20c, Chicago.

Cleveland, Feb. 26.—Topped by automotive demand, nuts and bolts are in an active buying period. Prices are firm. Moderate tonnages of rivets are being booked. No sales as yet have been recorded at 3.10c, Pittsburgh, which level will accompany the new card of extras shortly to appear. Shipments on 2.90c contracts, however, have been heavy.

Broadens Vacation Policy

Edgar S. Bloom, president of the Western Electric Co., has announced that vacations with salary are to be granted by his company to its factory workers as well as to its office employes. The privilege of vacation with salary will be extended to 15,000 shop workers, making a total of 40,000 shop and office workers who will be given vacations, at a cost to the company of $3,000,000 a year. Every employe who has been with the company a year will be given one week's vacation, while employes with the company two years or more will be given two weeks.

Haven Goes With McKee

William A. Haven, for 10 years with the Republic Iron & Steel Co., Youngstown, O., as superintendent of blast furnaces, has resigned to become associated with Arthur G. McKee & Co., engineers and contractors, Cleveland, as vice president.

Washburn Wire Co., Hornell, N. Y., has increased its capital stock from 1000 to 2000 shares no par value.

Wire

Second Quarter Books Opened at $2 Advance Over Fourth Quarter —Manufacturers Take Tonnage

SECOND quarter wire and nails will be quoted at current prices, which are $2 above those prevailing for the fourth quarter. Contracts are being booked on that basis, both in the East and the West. Jobbers are not taking heavy tonnages as weather conditions have restricted demand in agricultural territory. Manufacturers are best buyers in the present market.

WIRE PRICES, PAGE 604

Chicago, Feb. 26.—Western wire mills have been enabled to speed production about five points to 70 per cent. Heavy snow and ice in the West and Northwest undoubtedly are checking buying activity, particularly in woven fencing and wire nails. Manufacturers' and merchants' wire continues steady. February was a good month for automobile spring wire, and March schedules are promising. Second quarter books have been opened at the prevailing prices of 2.55c, Chicago or western mills, for bright plain wire, and $2.70 for wire nails, to large jobbers.

Worcester, Mass., Feb. 26.—Demand for wire and wire products continues steady at firm prices. While specifications are in limited lots, the total is generally seasonally satisfactory and well spread, with manufacturers' wire and specialties in the lead. Shipments are closer to current consumption. Plain wire remains 2.75c, Worcester base, to dealers.

Pittsburgh, Feb. 26.—Producers have opened books for second quarter, with current prices of 2.50c to 2.60c for plain wire and $2.65 to $2.75 for wire nails prevailing. Specifications have improved lately, although activity largely is restricted to demand from manufacturers. Buying by jobbers continues light, particularly in nails and fencing material. Current prices, an advance of $2 a ton over those prevailing in fourth quarter, have been well maintained and although specifications against first quarter contracts were slow to expand new buying has improved considerably. Mill operations generally are unchanged.

Cleveland, Feb. 26.—Wire and wire products contracts are being taken at the new figures almost daily. Tonnages for the most part are small because sellers find the trade well covered. As deliveries against some contracts at fourth quarter levels will run until March 31, some customers will not have to pay the higher figures until well into second quarter. These contracts were booked before the advance, for shipment at mill convenience, ostensibly for January or early February but buyers state mills will accept releases until the last of March.

Detroit, Feb. 26.—Manufacturers' wire is moving well into the district, although new business is not heavy, which is normal for midquarter. Heavy jobbers stocks of wire nails have militated against fresh buying of this product. Manufacturers' wire is usually quoted 2.735c, delivered Detroit, and wire nails at 2.90c, delivered Detroit.

Buffalo, Feb. 26.—Operation of wire plants is above seasonal average. There is good demand for spring seat wire, also for specialties. All wire prices are reported soldly established.

Cold Finished Steel

Specifications Hold at January Rate with Shipments Larger

COLD FINISHED PRICES, PAGE 603

Pittsburgh, Feb. 26.—Specifications for cold finished steel bars continue active although little change from the January rate. Shipments are slightly ahead of last month. Few contracts for second quarter have been signed at the recently announced price of 2.30c, Pittsburgh, an advance of $2 a ton over the previous level. First quarter contracts will expire March 15. Turned and ground shafting also is quoted $2 a ton higher at 2.65c to 3.10c for sizes 1 3/16-inch to 7-inch.

Cleveland, Feb. 26.—Books of the cold bar finishers have been opened for second quarter at $2 per ton advance or 2.35c, Cleveland, base. Specifications against the present quarter's 2.25c, Cleveland, base, arrangements are active, February tonnage being far ahead of that month a year ago. Automotive consumption is consistently high. Other consuming lines are taking their quotas.

Detroit, Feb. 26.—Cold finished bar makers generally are quoting the advanced price of 2.30c, Chicago, or 2.57c, delivered Detroit. Second quarter contracting has not formally been opened but will get under way shortly. Specifications for shipment in March indicate no diminution of the present high rate of consumption.

Reopen Emaus Foundry

Daniel Pennebacker, Allentown, Pa., founder of the Pennebacker Foundry Co., Emaus, Pa., has purchased the old Emaus Foundry. It has been idle for a number of years. Now it will be used for the making of balls for grinding cement.

Strip

Active Demand Increases Backlogs and Delays Deliveries—New Price Being Put in Effect

CONSUMERS of strip steel, both cold and hot-rolled, continue to demand tonnages and mills find delivery is deferred further, in some cases to six weeks. The new prices on hot-rolled are in effect but buying at these levels has not developed sufficiently to constitute a test. On spot business there has been no weakness of price. Cold-rolled price continues firm.

STRIP PRICES, PAGE 604

Pittsburgh, Feb. 26.—Strip steel producers find a continuation of active demand and deferred shipments on both hot and cold rolled material. Narrow sizes of hot strip are slightly more active and deliveries have been extended slightly to about six weeks. New buying approximates shipments and backlogs show no decrease. Although books are open for second quarter on hot strip at newly announced prices of 2.00c, Pittsburgh, for sizes up to 6-inch, and 1.90c for 6 1/16 to 24-inch, few contracts have been signed. New prices are reported firmly held, however, on what spot business is being placed. Cold-rolled strip continues 2.95c, Pittsburgh.

Cleveland, Feb. 26.—Strip steel demand shows a tendency to expand. Order books are growing as customers anticipate requirements to obtain place on mill schedules. Cold strip under the new card of extras is quotable at 2.85c, Pittsburgh, with 2.75c, Pittsburgh, applying on extra large tonnages. Hot strip is firm and uniform at 1.90c to 2.00c depending upon width. Some exceedingly narrow stock for light hoops at times commands a premium over 2.00c, base. Stamping companies are active buyers. Cold strip deliveries usually are four or more weeks deferred and little hot strip is available before the middle of March, most makers being filled until still later dates.

Chicago, Feb. 26.—Announcement is made here by the American Steel & Wire Co. that it is adopting the new card of cold strip extras. Quotations on the basis of 2.95c, Pittsburgh-Cleveland, are being named, with 2.85c contracts still in effect.

Nonferrous Metals

Large Buying Forces Copper and Lead Prices Up—Red Metal Jumps Half Cent on Two Quick Rises—Consumption Heavy

Prices of the Week, Cents a Pound

	Copper, Electro delivered	Copper, Lake delivered	Copper, Casting refinery	Straits Tin, New Spot	Straits Tin, York Futures	Lead, New York	Lead, East St. Louis	Zinc, St. Louis	98-99% Aluminum	Spot Antimony	Ingot Nickel
Feb. 20	18.00	18.10	17.75	49.10	49.10	6.95	6.85	6.35	23.90	9.50	35.00
Feb. 21	18.00	18.10	17.75	49.00	49.00	7.00	6.87½	6.35	23.90	9.50	35.00
Feb. 22 Holiday											
Feb. 25	18.15	18.25	18.00	49.00	49.00	7.00	6.90	6.35	23.90	9.30	35.00
Feb. 26	18.50	18.56¼	18.25	49.00	49.00	7.07½	6.90	6.35	23.90	9.37½	35.00

NEW YORK, Feb. 26.—Heavy buying sent the prices of copper and lead up again in the past week. Other metals remained unchanged, with buying of a routine nature. Zinc and tin continued remarkably steady, while antimony, which also was in this class, dropped a little on account of quietness. Nickel and aluminum were firm. Consumption of all metals was unusually large.

Brass and copper products followed the first rise in the copper market quickly. Brass and nickel silver went up ¼ cent, copper wire ¼ cent, other copper products ⅜ cent, except seamless copper tubing which advanced ½ cent. These increases reflect not only the strength of the copper market, but the growing volume of business in products. Mill order books seldom have been so well filled.

Copper—Buying picked up in the past week. The price remained at 18.00c, Connecticut, until Monday noon when it became 18.25c. Buying was extremely large at the new price, with orders running into June, and paved the way for the second rise to 18.50c, Connecticut, on Tuesday. Export business also has been large in the past few days and the price was increased to 18.50c, Tuesday. Every indication promises that the copper market will remain extremely tight all through the first half of the year. Shipments are going as rapidly as the refineries are able to get them out. There is talk about copper going as high as 20.00c, and the one question on the horizon is what will happen to the price in case business at large has its seasonal let-down in the summer. Producers are well sold through May, and have large business on their books for June. Additional lots, however, will become available from time to time.

Tin—Buying by consumers has been of large size on only one day in the past week. The price has been unusually steady around 49.00c. Speculation in tin is unusually light. Consumption probably is larger than ever before, but output provides abundant supplies. Spot and futures continue to sell at one price.

Zinc—Prime Western continues to sell at 6.35c, East St. Louis, but business is of a routine nature. The steady way in which buying is done results in the volume attracting less attention than might otherwise be the case. Zinc ore is steady at $41 a ton, but this price is $1 higher than had prevailed until recently. It had been thought that the strength in ore would result in the higher price for prime western metal, but it has not yet worked out that way. Shipments of high grade are very large and the price is unchanged. Output of slab zinc in the United States totaled 49,709 tons for January compared with 50,591 tons in December, the American Bureau of Metal Statistics reports. World output in January amounted to 131,169 tons against 137,210 tons a month preceding.

Lead—Buying of lead has been unusually large in the past week. Prices have been strong, with St. Louis market getting close to New York, and the latter having some premium prices. Some users have had difficulty in getting all the lead they want for March shipment. The New York market has been unusually independent of the London price lately on account of the big demand here.

Aluminum—Shipments are very large but prices are unchanged. Good business appears to be assured over the first half of the year.

Nickel—Shipments are extremely large to all classes of users, but prices are unchanged.—*Daily Metal Trade.*

Mill Products

Base prices cents per pound f.o.b. mill, except where otherwise specified

SHEETS	
Yellow brass (high)	22.75
Copper, hot rolled	27.75
Lead, full sheets (cut ¼c more)	9.75
Zinc sheet (100-uound base)	$9.75
Zinc strip (100-pound base)	$8.75
Aluminum, flat sheets, up to 10 gage, 3" to 72" wide	31.30
SEAMLESS TUBE	
Yellow brass (high)	27.62½
Copper	29.25
RODS	
Yellow brass (high, full turnings)	20.50
Naval brass	22.50
WIRE	
Copper	20.37½
Yellow brass (high)	22.50

Old Metals

Dealers' buying prices, cents per pound

HEAVY RED BRASS	
New York	11.75 to 12.00
Chicago	13.25 to 13.75
Cleveland	13.00 to 13.50
HEAVY YELLOW BRASS	
Cleveland	9.50 to 10.00
ZINC	
New York	3.50
Cleveland	3.00 to 3.50
HEAVY COPPER AND WIRE	
New York	15.25 to 15.50
Boston	14.75 to 15.00
Chicago	15.50 to 16.00
Cleveland	15.00 to 15.50
RED BRASS BORINGS	
New York	11.00 to 11.50
YELLOW BRASS TUBING	
Cleveland	10.00 to 10.50
LIGHT COPPER	
New York	13.00 to 13.25
Chicago	13.50 to 13.75
Cleveland	13.50 to 14.00
LIGHT BRASS	
Boston	7.50 to 7.75
Chicago	9.00 to 9.50
Cleveland	7.50 to 8.00
ALUMINUM	
Clippings, Cleveland	17.50 to 18.00
Borings, Cleveland	8.00 to 8.50
Cast, Cleveland	12.50 to 12.75
Cast, Boston	10.50 to 11.00

Secondary Metals

Remelt aluminum No. 12	16.50 to 17.00
Brass ingot, 85-5-5-5	16.50 to 17.00

Coke By-Products

Benzols Move to Rubber Interests—All Prices Firm but Unchanged

New York, Feb. 26.—Briskness characterizes trading in light oil distillates. Substantial quantities of pure and 90 per cent benzols continue to be purchased by rubber manufacturers in particular, and toluol is moving against contracts at a rate that leaves little spot material available. Solvent naphtha and commercial xylol are moving chiefly for the account of the lacquer trade, prices are unchanged.

Sulphate of ammonia continues dull. Meanwhile the market remains nominally unchanged at $2.30, delivered, for material for domestic account, and $2.20, port, in double bags, for foreign account.

Coke Oven By-Products

Per Gallon at Producers' Plant in Tank Lots

	Spot
Pure benzol	$0.23
90 per cent benzol	0.23
Toluol (nominal)	0.40
Solvent naphtha	0.30
Commercial xylol	0.30
Per Pound at Producers' Plants in 250-Pound Drums	
Phenol	0.17
Per Pound at Producers' Plants	
Naphthalene flakes	0.05½ to 0.06½
Naphthalene balls	0.06½ to 0.07½
Per 100 Pounds Delivered	
Sulphate of ammonia	$2.30

Warehouse

Prices Largely Unchanged and Firm—Order Books Expand as Mill Deliveries Tighten—February Sales Ahead of January's

EXCEPT for removal of a 10-cent size extra on blue annealed sheets over 42 inches wide in New York and a rise in structural rivets at Chicago, jobbers have made no price changes. They appear to be waiting to see if the recent mill advances will hold. In the meantime, demand is unhindered and deferred mill deliveries are rebounding to the benefit of warehouse dispositions. In most every sector, February tonnage is ahead of January.

New York—Leading jobbers here have discontinued the 10-cent size extra on blue annealed sheets over 42 inches in width. The price situation otherwise is unchanged, although increases in strip steel and cold-finished steel are still under discussion.

Philadelphia—Business continues to come to jobbers in good volume. Prices are firm and unchanged.

Pittsburgh—Sales continue at a lower rate than a month ago. Total tonnage, however, is seasonally large. Jobbers' prices are not affected by recent mill advances.

Buffalo—January and February developed much larger warehouse business than usual. Sales exceeded those of the like period in 1928.

Cleveland—February sales of the heavier rolled steel products by jobbers aggregate well ahead of January's. Deferred mill deliveries aid materially. The same thing is true of sheets, due to large orders from tinners who are putting in their stocks of building materials for the spring trade. Sheet prices have not yet followed the mill advances. Cold-finished bars are active, mostly to the automotive trade.

Detroit—Warehouse demand for iron and steel products continues strong, exceeding the rate both of January and last February. Requirements are well diversified. Warehouse sellers expect to benefit even further from deferred mill deliveries. Warehouse prices are strong and unchanged. Structural rivets are expected to advance in conformity with recent mill increases.

Chicago—All jobbers have announced 3.80c, base, as their price on large rivets in keg lots. This advance of $4 per ton follows the recent mill increase. February sales are still slightly behind those of January but show a tendency to expand.

Cincinnati—Warehouse business is steady. Tonnages increased somewhat during the past week. Last week's report that bars, bands and structural shapes had advanced $1 proves erroneous.

Warehouse Quotations in Cents Per Pound at Leading Market Centers

STEEL BARS

Baltimore	3.10c
Boston	3.265c
Buffalo	3.30c
Chicago	3.00c
Cincinnati	3.30c
Cleveland	3.00c
Detroit	3.00c
Ft. Worth	3.75c
Houston	3.00c
Los Angeles	3.30c
New York††‡‡	3.25c
Philadelphia*	2.80c
Pittsburgh	2.90c
Portland	3.00c
San Francisco	3.15c
Seattle	3.00c
St. Louis	3.15c
St. Paul	3.25c
Tulsa	3.75c to 4.04c

IRON BARS

Baltimore	3.10c
Boston	3.265c
Buffalo	3.30c
Chicago	3.00c
Cincinnati	3.30c
Detroit	3.00c
Ft. Worth	3.75c
New York††	2.80c to 3.24c
Philadelphia*	2.80c
St. Louis	3.15c
Tulsa	3.75c to 4.04c

REINFORCING BARS

Baltimore	3.31c
Boston	3.265c to 3.50c
Buffalo	2.75c
Cincinnati	3.15c
Cleveland	2.25c to 3.00c
Detroit	2.30c to 3.00c
Ft. Worth	3.50c
Houston	3.00c
Los Angeles cl.	2.65c
Los Angeles lcl.	3.00c
New York	2.85c to 3.25c
Philadelphia	2.75c to 3.10c
Pittsburgh	2.75c to 3.175c
San Francisco cl.	2.00c
San Francisco lcl.	2.25c
Seattle	3.00c
St. Louis	3.15c
Tulsa	3.75c to 4.00c
Youngstown	2.30c to 2.60c

STRUCTURAL SHAPES

Baltimore	3.10c
Boston	3.365c
Buffalo	3.40c
Chicago	3.10c
Cincinnati	3.40c
Cleveland	3.00c
Detroit	3.10c
Ft. Worth	4.00c
Houston	3.25c
Los Angeles	3.30c
New York†††‡	3.25c to 3.30c
Philadelphia*	2.70c
Pittsburgh	3.00c
Portland	3.00c
San Francisco	3.15c
Seattle	3.00c
St. Louis	3.25c
St. Paul	3.35c
Tulsa	3.75c to 4.14c

PLATES

Baltimore	3.10c
Boston	3.365c
Buffalo	3.40c
Chicago	3.10c
Cincinnati	3.40c
Cleveland, ¼-in. and thicker	3.00c
Cleve., 3/16-in.	3.20c
Detroit	3.10c
Detroit, 3/16-in.	3.30c
Ft. Worth	4.00c
Houston	3.00c
Los Angeles	3.30c
New York‡‡	3.30c
Philadelphia*	2.70c
Phila., 3/16-in.*	2.90c
Pittsburgh	3.00c
Portland	3.00c
San Francisco	3.15c
Seattle	3.00c
St. Louis	3.25c
St. Paul	3.35c
Tulsa	3.75c to 4.14c

NO. 10 BLUE ANNEALED

Baltimore	3.45c
Boston, 3/16-in.	3.915c
Buffalo	3.50c
Chicago	3.35c
Cincinnati	3.45c
Cleveland	3.25c
Detroit	3.35c
Ft. Worth	4.50c
Houston	3.90c
Los Angeles	4.00c
New York‡‡	3.90c
Portland	3.75c
Philadelphia*†	3.15c
Pittsburgh**	3.20c
San Farncisco	3.80c
Seattle	4.00c
St. Louis	3.45c
St. Paul	3.75c
Tulsa	4.20c to 4.34c

NO. 24 BLACK SHEETS

Baltimore	3.25c to 4.00c
Boston	4.85c
Buffalo	4.20c
Chicago	3.80c
Cincinnati	3.90c
Cleveland	3.60c
Detroit	3.95c
Ft. Worth	4.70c
Los Angeles	4.90c
New York	3.90c to 4.00c
Philadelphia*†	4.00c
Pittsburgh**	3.80c
Portland	4.90c
San Francisco	4.90c
Seattle	5.00c
St. Louis	4.10c
St. Paul	3.95c
Tulsa	4.34c

NO. 24 GALVANIZED SHEETS

Baltimore	4.30c to 5.00c
Boston	5.60c
Buffalo	4.70c to 4.85c
Chicago	4.65c
Cincinnati	4.75c
Cleveland	4.45c
Detroit	4.75c
Ft. Worth	5.50c
Houston	5.30c
Los Angeles	5.30c
New York	4.75c
Philadelphia*†	4.75c
Pittsburgh**	4.55c
Portland	5.50c
San Francisco	5.30c
Seattle	5.50c
St. Louis	4.95c
St. Paul	4.90c
Tulsa	5.10c to 5.35c

BANDS

Baltimore	3.85c
Boston	4.015c to 5.00c
Buffalo	3.65c
Chicago	3.20c
Cincinnati	3.50c
Cleveland	3.25c to 3.65c
Detroit, ⅞-in. and lighter	3.30c
Ft. Worth	4.25c
Houston	3.65c
Los Angeles	4.15c
New York‡‡	3.75c
Philadelphia*	3.15c
Pittsburgh	3.25c
Portland	4.00c
San Francisco	3.75c
Seattle	4.00c
St. Paul	3.50c
Tulsa	4.50c to 4.69c

HOOPS

Baltimore	4.00c
Boston	5.50c to 6.00c
Buffalo	4.05c
Chicago	3.75c
Cincinnati	4.05c
Cleveland	3.25c to 3.65c
Detroit, No. 14 and lighter	3.80c
New York‡‡	4.25c
Philadelphia*	3.40c
Pittsburgh	4.25c
Seattle	5.00c
St. Paul	4.00c

COLD FINISHED STEEL

	Rounds, hexagons,	Flats, squares
Baltimore (c)	3.35c	3.85c
Boston	3.55c	4.05c
Buffalo	3.95c	4.45c
Chicago	3.60c	4.10c
Cincinnati	3.85c	4.35c
Cleveland	3.65c	4.15c
Detroit	3.85c	4.35c
Los Angeles (a)	4.50c	.....
New York	3.50c	4.00c
Philadelphia*	3.50c	4.00c
Pittsburgh	3.60c	4.10c
Portland (a)	4.50c	.....
San Fran. (a)	4.25c	.....
Seattle (a)	5.00c	.....
St. Paul (a)	3.85c	.....
Tulsa	4.64c	5.14c

(a) Rounds only.

COLD ROLLED STRIP

Boston, 0.100-inch, 500 pound lots	5.30c
Buffalo	5.85c
Chicago (b)	6.10c
Cincinnati	7.15c
Cleveland (b)	5.95c
Detroit	5.80c
New York	5.15c
Philadelphia (c)	5.25c

(b) Net base, straightening, cutting, boxing 1 ton or more. (c) Plus mill, size and quantity extras.

SWEDISH IRON AND STEEL

New York duty paid

Hollow drill steel	13.00c
Iron bars, rounds	6.10c
Iron bars, flats and squares	6.50c

*Plus quantity differentials. ‡‡Minus quantity differentials. ††Domestic bars. **25 or more sheets. *†50 or more bundles.

Pacific Coast

Outcome of Straits Bridge Bids Awaited—Pipe Is Most Active

STEEL interest on the Coast is centered on the outcome of the bids recently taken by the Southern Pacific Co. on steel for the bridge over Carquinez straits. No decision has been announced. Pipe requirements are large and much is being awarded and considered for further awards. Two large gas holders will require some 9000 tons of plates. Prices are steady.

San Francisco, Feb. 23.—(*By Air Mail*)—Interest continues to center around the opening of bids on the 25,000-ton Carquinez straits bridge for the Southern Pacific Co., last Saturday. To date the company has given out no information regarding the bids. Demand, generally, has improved and important new business calls for 9000 tons of plates for two large gas holders for the Pacific Gas & Electric Co. at San Francisco and Oakland and 2173 tons of cast iron pipe for Tacoma, Wash.

Foreign importations of iron and steel products on the Pacific Coast during November, 1928, figures for which have just been received, were as follows, for the major items:

(Figures Given in Tons)

	Nov. 1928	Oct. 1928	Nov. 1927	Total so far 1928
Coke	3,396	3,916	2,498	61,912
Cast iron pipe	4,691	3,015	1,782	26,821
Tubular products	4,217	3,667	1,563	32,012

Pig iron imports were slightly lower than in October. Bar importations showed a slight increase, while structural shape imports fell off more than 500 tons.

Pig Iron and Coke

Demand for foundry pig iron and coke continues limited to small tonnages for prompt shipment. No large sales were reported this week. Prices continue unchanged from those noted last week.

Coast Pig Iron Prices

Utah basic	$25.00 to 26.00
Utah foundry	25.00 to 26.00
*German	24.25
*Indian	24.00 to 25.00

*C.i.f. duty paid.

Bars, Plates and Shapes

Awards of concrete bars this week were less than 250 tons. To date this year 10,681 tons has been booked, compared with 15,831 tons for the corresponding period in 1928. Considerable new work is being figured, but most projects involve small lots. Quotations remain at 2.20c to 2.30c, base, on out-of-stocks carload lots, with as high as 2.60c applying on less than carload lots.

Only one plate award was reported placed this week. The Denver board of water commissioners placed 1512 tons of 60-inch reinforced concrete steel lined pipe with the Lock-Joint Pipe Co. So far this year awards total 35,528 tons, compared with 2539 tons for the same period of a year ago. The Pacific Gas & Electric Co. will open bids today on one 10,000,000-cubic foot gas holder for San Francisco and one 8,000,000-cubic foot holder for Oakland, involving a total of 9000 tons of plates. The Los Angeles Mfg. Co. was low bidder on 120 tons of 12 to 16-inch electrically welded steel pipe for Upland, Calif. Plate prices continue weak at 2.20c to 2.25c c.i.f. Coast ports.

Among the larger lots of structural shapes booked this week, which aggregated 3273 tons, were 687 tons for a bank at Beverly Hills, secured by the Consolidated Steel Corp. and 350 tons for a club in Los Angeles taken by McClintic-Marshall Co. A heavy volume of pending business is up and totals more than 33,000 tons. Bids open March 13 for 225 tons for a bridge over the Mad river, Sacramento, Calif. Plain structural shapes remain firm at 2.35c c.i.f.

Other Finished Material

Awards of cast iron pipe this week were the second heaviest of the year and aggregated 4480 tons. Important bookings included 1710 tons for Los Angeles, placed with the American Cast Iron Pipe Co. and the Pacific States Cast Iron Pipe Co., 1084 tons for the East Bay municipal utility district, Oakland. Pending business now exceeds 7500 tons. The Pacific States Cast Iron Pipe Co. was low bidder on 1350 tons for Lomita district No. 13, Los Angeles.

Much Pipe Is Needed

Seattle, Feb. 21.—Featuring the steel market in the Pacific Northwest this week were contracts placed involving about 2700 tons of cast iron pipe for various projects in this state, all obtained by domestic manufacturers. Inquiry for cast iron pipe is exceptionally strong and several additional projects are up for action soon.

Announcement is made by the Fisher Body Corp. of the purchase of a site here on which a $1,500,000 factory is to be erected. Work is to begin next month on a 16-acre tract.

Great Northern railroad has applied for a permit from the interstate commerce commission to extend its line from Klamath Falls, Oreg., into California to connect with the Western Pacific railroad.

Pig Iron and Coke

Firmness in pig iron prices is apparent, an advance of $1 in Columbia being expected shortly. This increase will make the new level $27.50 for No. 1. Several large consumers in this district have contracts for Columbia protecting them at present prices until the middle of this year. Supplies of India Burn iron have been cut off and foundrymen will probably interest themselves in British and European iron which has practically been out of this market for some time. Coke prices are unchanged at $13.50 and $13.25 for British, which is arriving in parcel shipments.

Bars, Plates and Shapes

Local steel mills this week took contracts for 350 tons of reinforcing materials in 100-ton lots or more, in addition to many small lots. Northwest Steel Rolling Mills signed a contract to furnish 250 tons for the Spring-Summit apartment building, while the Pacific Coast Steel Co. was awarded 100 tons for the Boeing Airplane Co.'s office structure, general contract held by the Austin Co. Several contracts for reinforcing bars are pending. Prices of this material are firm at 2.20c and merchant bars are unchanged at 2.35c.

No large inquiries for plates are immediately pending although a water pipe job at Spokane calling for 2000 tons is to be up for figures next month. Jobbing houses are selling a fair volume of light plates for tank and boiler work. The Puget Sound Machinery Depot has the contract for a 1000-horsepower boiler, requiring 150 tons of plates and other steel, for a new power plant at Shelton in the mill of the Rainier Pulp & Paper Co. Mill prices are steady at 2.25c.

While fabricating plants in this district are busy, no new work of importance has developed recently and no contracts were placed this week.

Bar Iron Wages Stand

Bar iron mill wages for March and April will be based upon an average selling price of 2.00c for bar iron in January and February, according to S. L. Leonard, representing the Western Bar Iron association at a meeting with representatives of the Amalgamated association. This is identical with the wage rate in effect for January and February, which in turn represented an increase from the 1.95c bar iron base governing wages for November and December.

Kalman Buys Baker Steel

Philadelphia, Feb. 26.—The Kalman Steel Co., Chicago, has concluded purchase of the Baker Steel Co., Philadelphia, and will conduct an engineering and warehouse service in connection with building construction. C. E. Dale, formerly vice president of the Baker company, is manager of this new Kalman branch.

Steelworks at Detroit Being Organized

Detroit, Feb. 26.—Final details of the organization of the Great Lakes Steel Corp. by George R. Fink and associates in the Michigan Steel Corp. are being worked out.

Present plans call for a plant along the Detroit river in Ecorse, 8 miles south of Detroit, to include open-hearth furnaces, semifinished capacity and hoop, band, shape, light plate and hot and cold-rolled strip finishing mills. The manufacture of forging bars also is contemplated.

The initial capacity of the Great Lakes plant is to be 400,000 tons annually. The present capacity of sheet mills of the Michigan Steel Corp., near whose plant a site for the Great Lakes works is being obtained, is 50,000 tons of full-finished sheets. Mr. Fink who organized the Michigan Steel Corp. in 1922 and is now its head, will be president and general manager of the new Great Lakes corporation.

So soon as organized details are completed it is expected that contracts for equipment for the Great Lakes plant will be awarded and ground will be broken shortly. On this basis production in some departments should be under way within a year.

Capitalization of the Great Lakes Corp. consists of 700,000 shares of no par common and not to exceed 300,000 shares of no par preferred. Common stock has been offered at $50 per share and initial capital requirements are estimated at $18,000,000 to $20,000,000.

Gulf States Expansion Program Large

New York, Feb. 26.—Plans for expansion of the Gulf States Steel Co., according to William H. Coverdale, president, call for construction of a 40-inch blooming mill, a universal plate mill and a sheet mill. Work on the installation of these new units is to be started shortly and it is expected they will be completed and in operation this year. The outlay for these improvements will be about $4,000,000, to be provided by sale of 72,500 shares of new no-par common stock at $60 per share.

Last year the company completed the erection of a modern blast furnace, a new power plant, and electrification of its rod mill and coal and iron mines, which cost about $4,000,000. Since the organization of the company in 1913, the Gulf States Steel Co. has spent about $26,000,000 for improvements, which will be increased this year to $30,000,000.

By the end of 1929, the company's complete line of products will include commercial bars, concrete reinforcing bars, plates, sheets, billets, small shapes and pig iron and a complete line of wire and wire products, including fence.

Steel Corp. to Increase Common Shares

Directors of the United States Steel Corp. have approved a plan to increase common stock to 12,500,000 shares. The present authorized issue is 7,533,210 shares, of which 7,116,235 shares are outstanding.

It is the intention to offer common stockholders the right to subscribe for additional shares, but the amount, the ratio to present holdings, the price, the terms and the date of payment will be fixed in the offer when made.

Funds received from sale of the stock, together with such portions as the directors may decide upon employing cash resources in hand representing surplus and other reserves, part of which cash resources has already been used in the purchase of bonds, will be employed to redeem by purchase for cancellation and to call for retirement all or part of the bonds of the corporation, as the directors may elect.

There were outstanding Dec. 31, 1928, exclusive of those held in sinking funds and in corporation's treasury, 50 year 5 per cent bonds of 1951 totaling $134,830,000 and 10-60-year 5 per cent bonds of 1963 totaling $136,555,000.

Asks American Valuation

Washington, Feb. 26.—Thomas J. Doherty, appearing before the house ways and means committee today in connection with administrative features of the tariff act, asked for an American valuation basis for iron and steel products.

George E. Dix, Union Steel Co., New York, complained that markings on imported goods were being held improper by the courts although the treasury decision giving directions was followed.

Will Convert Pipe Mill

A lapweld pipe mill at the Lorain, O., works of the National Tube Co., Pittsburgh, is to be converted into a seamless mill. A year and $5,000,000 will be required, it is estimated.

Add Three Open Hearths at Youngstown

Youngstown, O., Feb. 26.—Straining to produce every pound of steel possible under stress of present extraordinary demand for finished products, steelmakers here are forced to operate some open hearth furnaces in extra turns over Sunday. Independents have 48 open hearths active this week out of a total of 51, against 45 active last week, the others being idle for repairs. Steel corporation subsidiaries are active between 80 and 85 per cent. Bessemer production is unchanged around 75 per cent.

Independent bar mills are 70 per cent active and would be higher except for lack of semifinished steel, while Carnegie mills continue at 85 per cent. Shortage of sheet bars has compelled anxious mill managers to cut mill activity slightly this week, operating 117 independent units out of a total of 125, against 123 last week, or 93 per cent against 98 per cent. Strip and tin mill operations with independents continue at capacity rates, and Steel corporation subsidiary tin mills are unchanged at 85 per cent. Pipe mill activity is unchanged at 12 active units out of 20. The Byers puddle and skelp mills at Girard are all active this week.

Chicago Blast Furnaces Near Capacity

Chicago, Feb. 26.—Steelworks operations in the Chicago district are fully 95 per cent, or a shade better, as the result of the blowing in of two more steelworks furnaces by Illinois Steel Co., No. 6 at South Chicago on Feb. 20, and No. 11 at Gary on Feb. 24. This means an operating rate virtually at capacity for this district.

The leading producer now has 10 of its 12 furnaces active at Gary, nine at South Chicago and one at Joliet. Twenty-nine of the 36 steelworks furnaces in the district are blowing. Inland Steel Co. and Youngstown Sheet & Tube Co. have four and two furnaces active, respectively, at Indiana Harbor, and Wisconsin Steel Co. has its three furnaces blowing at South Chicago. Plate and bar mills continue at capacity and sheet mill operations are 85 to 90 per cent, with tonnage on books sufficient for heavier operations.

The Grand Canyon bridge is the only one across the Colorado river in a stretch of 600 miles.

Manufacture of Iron, Steel and Machinery Is Leading Industry

MANUFACTURE of iron and steel and their products, plus the manufacture of machinery, is the leading industry of the United States. The combined value of the products of the industry in 1927, according to the latest statistics made available by the census bureau at Washington, was slightly in excess of eleven billion dollars, topping food and kindred products by a narrow margin.

Taking iron and steel separately, it is the fourth industry, trailing behind food products, textiles and chemicals. The manufacture of machinery is the fifth industry and the manufacture of transportation equipment for air, land and water, is a close sixth. Detail for these industries in 1927 is given in the subjoined table.

The value of all manufactured products of the United States in 1927 exceeded sixty-two billion dollars, a fractional gain over 1925, according to the census bureau. The accompanying table gives comparative data for all manufacturing industries in the United States.

Charcoal Iron Plant Sold

The blast furnace plant of the Charcoal Iron Co. of America at Ashland, Wis., idle for more than ten years, has been sold for unpaid taxes amounting to about $60,000 to A. E. Appleyard, head of the American Black Granite Co., Minneapolis. The sale was effected at a special session of the Ashland county board, Feb. 16.

The American company recently acquired a large deposit of granite at Mellen, not far from Ashland, and is developing a quarry. Material will be hauled to Ashland by a new railroad line for finishing in a new plant to be installed in the Charcoal furnace plant.

Coke Production Gains

Production of by-product coke in January was 4,360,194 net tons, compared with 4,316,891 tons in December and 3,897,122 tons in January, 1928, according to the federal bureau of mines.

Beehive coke output in January was 479,100 net tons, contrasted with 397,800 tons in December and 375,800 tons last January.

Thus coke production in January totaled 4,839,294 net tons, compared with 4,714,691 tons in December and 4,272,922 tons in January, 1928.

By-product coke ovens in January consumed 6,265,000 net tons of coal and beehive ovens 756,000 tons.

Fatal and nonfatal accidents in Pennsylvania industries in January increased over December and January, 1928, according to the state department of labor and industry. There were 169 fatal and 13,644 nonfatal accidents in January.

Comparison of Manufactures, 1923, 1925 and 1927

	1927	1925	1923
Number of establishments	191,863	187,224	196,182
Wage earners (average for the year) (1)	8,351,257	8,381,511	8,776,646
Wages	$10,848,782,433	$10,727,337,625	$11,007,851,450
Paid for contract work	(3)	$601,356,183	$ 625,144,196
Cost of materials, factory supplies, fuel, and purchased power, total (2) (4)	$35,128,154,648	$35,896,886,428	$34,683,915,155
Materials and supplies	$33,230,822,278	(5)	(5)
Fuel and power	$ 1,897,332,370	(5)	(5)
Value of products (2), (4)	$62,713,947,403	$62,668,259,591	$60,529,574,115
Value added by manufacture (6)	$27,585,792,755	$26,771,373,163	$25,845,658,960
Horsepower	39,032,014	35,766,944	33,092,222

(1) Not including salaried employes.
(2) The amount of manufacturers' profits can not be calculated from the census figures, for the reason that no data are collected in regard to a number of items of expense, such as interest on investment, rent, depreciation, taxes, insurance, and advertising.
(3) Not called for on schedule.
(4) Comparability between 1925 and 1927 figures for cost of materials and value of products is affected somewhat by the fact that manufacture of paper and wood pulp was treated as a single industry at the census for 1925 and as two industries at the census for 1927.
(5) Not reported separately.
(6) Value of products less cost of materials, factory supplies, fuel, and purchased power.

WHAT LEADING INDUSTRIES DID IN 1927

	Census year	Number of establishments	Wage earners (average for the year)	Wages	Cost of materials, fuel, and power	Value of products	Value added by manufacture
All industries	1927	191,863	8,351,257	$10,848,782,433	$35,128,154,648	$62,713,947,403	$27,585,792,755
	1925	187,224	8,381,511	10,727,337,625	35,896,886,428	62,668,259,591	26,771,373,163
Food and kindred products	1927	49,786	679,158	823,387,583	8,113,432,583	10,999,789,550	2,886,356,967
	1925	47,947	662,010	791,049,484	7,709,916,601	10,373,082,162	2,663,165,561
Textiles and their products	1927	26,845	1,692,473	1,760,168,290	4,926,158,527	8,964,143,064	4,037,984,537
	1925	24,450	1,628,283	1,654,814,276	5,349,924,770	9,126,154,902	3,776,230,132
Iron and steel and their products, not including machinery	1927	6,346	835,091	1,264,406,082	3,540,708,921	6,199,252,444	2,658,543,523
	1925	6,068	851,270	1,284,339,157	3,734,349,860	6,461,668,061	2,727,318,201
Lumber and allied products	1927	20,163	866,581	929,789,682	1,633,938,116	3,457,427,173	1,823,489,057
	1925	21,926	921,266	978,472,291	1,725,350,920	3,689,126,705	1,963,775,786
Paper, printing, and related industries	1927	28,404	553,040	858,336,931	1,837,402,806	4,638,571,773	2,801,168,967
	1925	26,553	536,766	805,516,245	1,614,234,478	4,143,684,899	2,529,450,421
Chemicals and allied products	1927	8,939	394,817	534,947,864	4,061,009,903	6,404,914,348	2,343,904,445
	1925	8,871	381,075	506,386,054	4,184,910,627	6,438,027,055	2,253,116,428
Metals and metal products, other than iron and steel	1927	6,658	270,665	380,365,227	1,780,358,036	2,668,696,686	888,338,650
	1925	6,924	275,292	380,781,402	1,946,777,164	2,833,769,702	886,992,538
Machinery, not including transportation equipment	1927	12,038	886,344	1,287,777,619	2,062,670,606	5,367,014,850	3,304,344,244
	1925	11,807	858,843	1,225,359,140	1,985,367,067	5,020,281,100	3,034,914,033
Transportation equipment, air, land, and water	1927	2,537	494,905	803,297,856	2,907,949,399	4,702,378,136	1,794,428,737
	1925	2,778	559,579	908,487,563	3,389,101,383	5,451,753,433	2,062,652,050

Discussion of Alloy Steels Marks Meeting of A. I. M. M. E.

Iron and Steel Division Focuses Attention on Blast Furnace and Steelworks Practice—Award Three Medals

A CLOSER study of alloy steels was emphasized at the technical sessions of the iron and steel division, American Institute of Mining and Metallurgical Engineers at the annual meeting held at the Engineering Societies building, New York, Feb. 18 to 22. In the institute of metals division one day was given over to a symposium on corrosion. A general conference on production control was held jointly by all divisions on Tuesday afternoon.

Except for Tuesday simultaneous technical sessions were held both morning and afternoon during the convention. The iron and steel division discussed alloys, steel melting practice, steel structure and blast furnaces, and held many committee meetings.

With an attendance close to 1500 the 1928 record was broken. At the annual dinner Wednesday evening, three medals and one prize were awarded. W. Bradley, mining engineer and president, Bunker Hill & Sullivan Mining & Concentration Co., San Francisco, was elected president of the institute.

Study Blast Furnace Operating Problems

REPORTS of ingot yield in basic open hearth practice often are misleading according to C. D. King, research department, United States Steel Corp., New York. At the opening session Monday, he outlined an exhaustive study of losses and described a new way of figuring yields, based on the iron-to-silicon ratio in slags. Physical factors in losses are fairly simple to determine, but the metallurgical phases require more comprehensive investigation of the physical chemistry of the slag and metal than heretofore has been made, according to Mr. King. It was pointed out in this discussion that the magnetic determination of iron in slag often is misleading because small particles of slag are carried over by the magnet along with the iron.

A paper on the unreduced oxides in pig iron and their elimination in the basic open hearth furnace, written by C. H. Herty, Jr., and J. M. Gaines, Jr., assistant physical chemist, Pittsburgh experiment station, was presented by Mr. Gaines. Experimental facts indicate that silicates in the finished steel will cause various kinds of trouble, and that the higher the silicate in the iron the higher the silicate in the steel.

A lively session on blast furnace problems was held Wednesday, with W. H. Blauvelt, consulting engineer, New York, as chairman. T. L. Joseph, supervising engineer, bureau of mines, Minneapolis, presented two papers describing blast furnace investigation. The first written by himself and C. E. Wood, assistant chemist, bureau of

Officers Nominated

IRON AND STEEL DIVISION

Chairman

George B. Waterhouse
Professor of metallurgy, Massachusetts Institute of Technology, Cambridge, Mass.

Vice Chairman

Alexander L. Feild
Metallurgical engineer, Electric Metallurgical Co., New York.

Bradley Stoughton
Consulting metallurgist, Lehigh university, Bethlehem, Pa.

Richard Moldenke
Consulting metallurgist, Watchung, N. J.

Executive Committee

John A. Mathews
Vice president, Crucible Steel Co. of America, New York. (Three years)

Albert Sauveur
Professor of metallurgy, Harvard university, Cambridge, Mass.

Zay Jeffries
Consultant, Aluminum Co. of America, Cleveland. (Three years)

William J. Priestley
Vice president, Electro-Metallurgical Sales Corp., New York. (Two years)

Francis F. Lucas
Metallurgist, East Orange, N. J. (Two years)

Herbert M. Boylston
Professor of metallurgy, Case School of Applied Science, Cleveland. (One year)

John D. Hill
Engineer, Ingle Gold Co., Seattle. (One year)

John Johnson
Director of research, U. S. Steel Corp., New York. (One year)

Officers Nominated

AMERICAN INSTITUTE OF MINING AND METALLURGICAL ENGINEERS

President

Frederick W. Bradley*
President, Bunker Hill & Sullivan Mining & Concentrating Co., San Francisco.

Vice Presidents

Edgar Rickard*
New York

Henry A. Buehler*
State geologist, Rolla, Mo.

F. Julius Fohs
Consulting geologist, New York

Henry Krumb
Consulting mining engineer, Salt Lake City, Utah

George D. Barron
Rye, N. Y.

William H. Bassett
American Brass Co., Waterbury, Conn.

*New officers.

Officers Nominated

INSTITUTE OF METALS DIVISION

Chairman

Stanislaus Skowronski
Research chemist, Raritan Copper Works, Perth Amboy, N. J.

Vice Chairman

Zay Jeffries
Consultant, Aluminum Co. of America, Cleveland

Secretary

William M. Corse
Consulting metallurgist, Washington.

Executive Committee

John R. Freeman Jr.
Physicist, division of metallurgy, bureau of standards, Washington

Robert S. Archer
Metallurgist, Aluminum Co. of America, Cleveland

Paul D. Merica
Director of research, International Nickel Co., New York

Sam Tour
Metallurgist, Doehler Die-Casting Co., Batavia, N. Y.

Edgar C. Bain
Research staff, U. S. Steel Corp., New York

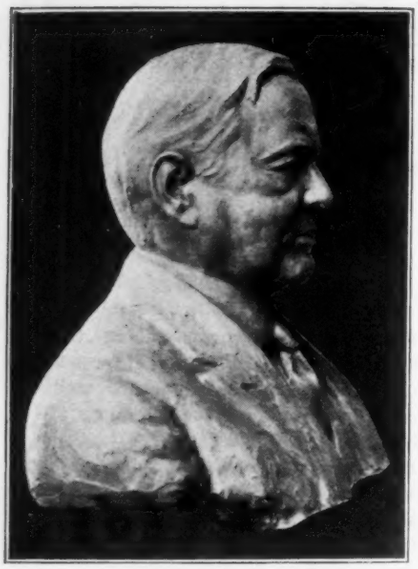
Fred L. Wolf
Chemical engineer, Ohio Brass Co., Mansfield, O.

G. E. Johnson
International Lead Refining Co., East Chicago, Ind.

Truman S. Fuller
Metallurgist, research laboratory, General Electric Co., Schenectady, N. Y.

Henry M. Williams
Frigidaire Corp., Dayton, O.

William Allen Scheuch
Metallurgist, Western Electric Co. Inc., Hawthorne, Chicago



A bronze bust of President-elect Hoover, the gift of C. A. Fisher, Denver, to the American Institute of Mining and Metallurgical Engineers, was unveiled at the annual meeting. The presentation was made by H. Foster Bain, national secretary of the institute. George F. Kunz, vice-president of Tiffany and Company received the bust on behalf of the institute. The bust is the work of Mrs. W. D. Leys, Yonkers, N. Y.

mines, Minneapolis, described the testing of barium oxide as a desulphurizing agent in blast furnace slag. The second paper was written by S. P. Kinney and C. C. Furnas, both of the bureau of mines at Minneapolis, and described experimental work to determine efficiency of contact between gases and solids in blast furnace operation.

The investigation described by Mr. Joseph failed to confirm any pronounced desulphurizing power of barium oxide. They found that the desulphurizing action of blast furnace slag varies directly with its molar basicity. Discussion brought out the statement that dolomite had a similar effect to that claimed for barium.

The second paper presented by Mr. Joseph described unusual experiments conducted at No. 4 furnace, Illinois Steel Co., S. Chicago, Ill. Four different zones in the furnace were selected and a thorough examination of conditions at each of these levels was made. It was found that the velocity of gases varies greatly from low speed at the side to speeds as high as 5 miles an hour and greater at the center. Temperature was found to vary in a corresponding manner, and reduction of ore was found to be surprisingly slow.

Richard Franchot, consulting chemist, Washington, in discussing "The Blast Furnace Theory" gave the efficiency of reduction of a furnace as ranging from 30 to 40 per cent, and said he was surprised to find many furnace operators convinced that there was little room for improvement in blast furnace efficiency. T. P. Read, secretary of the iron and steel division of the institute, in discussing this point presented figures taken from some 20 furnaces and carefully worked out to show the amount of iron in the charge used to produce a ton of pig iron. The curve was absurdly irregular, dropping in one or two cases below 1800 pounds of iron in the charge to produce 1 ton of pig iron. Dr. Read said that either the weights were inaccurate or the chemical analysis of the ore was faulty.

The iron and steel division held its annual meeting Wednesday morning at which time a report of the activity of the division during the past year was presented. To date 336 members of the institute have been enrolled in the iron and steel division.

Zay Jeffries, consulting engineer, Aluminum Co. of America, Cleveland, has been selected to deliver the Howe lecture in 1930. George B. Waterhouse was elected chairman of the iron and steel division for the ensuing year.

Studies Manganese Steel

The Henry M. Howe lecture was delivered by John H. Hall, metallurgical engineer, Taylor - Wharton Iron & Steel Co., Highbridge, N. J. After recounting his association with Mr. Howe some 25 years ago, Mr. Hall described his studies of Hadfield's or 12 per cent manganese steel. Some time ago I came to the conclusion that a change in the austenite grain size should follow a heat treatment consisting of prolonged annealing at or near 500 degrees Cent. followed by a second heating at 1060 degrees Cent. and quenching in water. My thought was that, just as in carbon steel, the process of letting the metal transform by slow cooling, and then heating it above its transformation point would cause a regranulation of the metal in manganese steel.

Douglas Medal

Mr. Hall's recent investigation has confirmed this earlier theory. He showed many slides of photomicrographs and gave results of physical tests to show that the tensile strength, elongation and reduction of area of 12 per cent manganese steel are improved by the double heat treatment.

Interesting research in the field of electric deposition of cast iron was described in a paper by Shun-ichi-Satoh, research staff, Mitsubishi research laboratory, Tokio, Japan, which was presented in abstract by Mr. Waterhouse. Mr. Shun-ichi-Satoh described in considerable detail his method of coating an iron bar or electrode with asbestos tape and then coating this with a pasty mixture of graphite and carborundum. By use of such covered electrodes connected with the negative pole he was able to deposit with considerable success high-grade cast iron. Microphotographs of the cast iron thus deposited or welded were shown on the screen. Francis B. Foley, superintendent of research, the Midvale Co., Nicetown, Philadelphia, in commenting on Mr. Satoh's paper said he thought that by increasing the voltage up to nearly 50 volts and by adding still another coating of asbestos and paste even better results of electric deposition could be secured.

Medals Are Awarded

THE JAMES DOUGLAS medal, which is presented for distinguished achievement in nonferrous metallurgy, was awarded this year to Paul D. Merica, head of research department, International Nickel Co., New York, for his contribution to and constructive research in physical metallurgy, especially for his work on aluminum and nickel alloys. The mining medal award this year went to John Hays Hammond, consulting engineer, New York. Edgar C. Bain, research staff, U. S. Steel Corp., New York, received the Robert Woolston Hunt medal for his paper entitled, "An Introduction to the Iron-Chrominum-Nickel Alloys." The Robert Woolston Hunt prize was presented to William D. Griffiths, metallurgical engineer, Duraloy Co., Pittsburgh.

The plea for engineering standards in the development of our whole social structure was made by George Otis Smith, director, geological survey, Washington, and retiring president of the American Institute of Mining & Metallurgical Engineers at the annual banquet held Wednesday night. The worker of today with the many rapidly revolving wheels at his command, he pointed out, can do more work in a short time than scores if not hundreds of his ancestors could do working from dawn to dark. An engineer today frequently travels more miles in a month than his grandfather did in a lifetime. All our progress in industry, transportation and communication is an exhibit of what engineering by the application of science has wrought. We need to realize that high-speed living involves fast spending and the acceleration which has characterized recent years cannot long continue without some check. The national engineering societies have become in a sense public utilities. With his habit of facing the facts the engineer can both promote and protect social progress.

Corrosion Takes Heavy Toll

The institute of metals division held its all-day symposium on corrosion on Thursday. Dr. Ulick R. Evans, Cambridge university, Cambridge, Eng., who came to this country at the invitation of the institute, was honorary chairman and presented a paper on the passivity of metals, and its relation to problems of corrosion. He told of the use of copper nitrate solution to study oxide films so thin as to be invisible. An exceedingly thin film is detected and its relative thickness determined by resistance of iron to the deposit of copper from the solution. He then pointed out that rust is not a direct oxidation product but a precipitate formed by secondary reactions. The direct product is the invisible film. Following this Mr. Evans described in considerable detail experiments to determine cause and nature of corrosion of iron and steel.

Other papers presented at this symposium included weather exposure tests of sheet duralumin by Henry S. Rawdon, metallurgist, bureau of standards, Washington; resistance of iron-nickel-chromium alloys to corrosion by acids by Norman B. Pillings and Donald E. Ackerman, research laboratory, International Nickel Co., New York; some aspects of corrosion fatigue by T. S. Fuller, research laboratory, General Electric Co., Schenectady, N. Y., and corrosion of tin and its alloys by C. L. Mantell, consulting engineer, Pratt Institute.

Much interesting work in the development of acid resisting alloys is under way in many countries according to Burnham E. Field, Union Carbide and Carbon Research Laboratories Inc., New York, who presented a paper describing nickel-molybdenum alloys to resist hydrochloric acid.

An analysis of corrosion-stress and resultant fatigue limit for various metals was presented by D. J. McAdam Jr., metallurgist, U. S. Naval engineering experiment station, Annapolis, Md.

A detailed and extensive study of open hearth operation from the chemical view point was described by C. H. Herty Jr., physical chemist, Pittsburgh experiment station, Pittsburgh. This started with the oxidation of scrap and continued through the sulphur absorption and the chemistry of pig iron to the ladle reactions.

J. L. Gregg and C. W. Kuttner, metallographic laboratory, Western Electric Co. Inc., Chicago, showed interesting slides giving microphotographs and X-ray diffraction graphs of tungsten carbide alloys.

Robert Woolston Hunt Medal

Central Alloy Net Rises Sharply in 1928

Net earnings of the Central Alloy Steel Corp., Massillon, O., in 1928 were $4,903,340, after all charges before dividends, compared with $2,725,656 in 1927. The net was equivalent to $3.24 a share on the common stock, compared with $1.56 a share in 1927, according to Chairman F. J. Griffiths in his annual report to stockholders.

Improvement in earnings reflected economies resulting from the uniting of the properties of United Alloy Steel Corp., Central Steel Co., and Central Furnace Co. in 1926. Although the average selling price of the company's product in 1928 was nearly 8 per cent below 1927, average costs were reduced 9.6 per cent per net ton.

In 1928 the company expended from earnings $3,320,410 on repairs and maintenance and $2,137,970 for new construction. Fifteen new Koppers by-product coke ovens were built at the Canton plant. Average employment in 1928 was 9560 with aggregate wages of $19,951,612.

The Central Alloy Steel Corp. produced 623,888 gross tons of carbon open-hearth steel ingots in 1928 against 432,083 tons in 1927. Production of alloy steel and special steel and iron ingots, including electric furnaces output, amounted to 605,015 gross tons in 1928 compared with 516,695 in 1927. Output of semifinished and finished products was 924,325 net tons compared with 788,361 in 1927. Shipments of strips and sheets in 1928 were 408,286 net tons against 275,290 tons one year before.

Holds Industrial Meeting

Talks and addresses prepared expressively for managers, superintendents and foremen of industrial plants form the educational program for the New England Industrial Electric Heating conference being held at the Massachusetts Institute of Technology, Boston. It opened in the Naval Architecture building Feb. 28 and will be in progress two days. Conference headquarters are at Hotel Statler, where a conference dinner will be given Feb. 28.

Information on the latest developments in the application of electric heat in manufacturing processes is provided, and a diversity of subjects in keeping with the field of interest comprises an intensive program. Subjects being presented deal with brass melting, arc welding, heat treating and allied topics.

Industrial Men in the Day's News

W. H. Oldham, Vice President in Charge of Southern Properties, Republic Iron & Steel Co.

THOROUGH knowledge of blast furnaces gained in 20 or more years, largely with one company, equips him well for his new duties.

* * *

SPECIALIZING in chemistry at college and taking a post graduate course in chemistry, he early discovered the important part chemicals play in iron production.

* * *

IT WAS his belief that blast furnaces should be larger, and he was among the first to recommend the 27 to 30-foot hearth and the 1000-ton per day stack.

WADE HAMPTON OLDHAM knows blast furnaces. Knows them from hearth to mantle and from mantle to receiving hopper. Regards them as entities possessing almost human characteristics and eccentricities. Has made them his life study, understands them thoroughly, handles them in a manner not entirely dissimilar to humans.

So, in leaving the Tennessee Coal, Iron & Railroad Co. to become vice president of the Republic Iron & Steel Co. in charge of that company's southern properties, he brings unusual qualifications to his new post. On blast furnaces he is an authority. His were the first in the South to blow with a larger volume of wind. He advocates hearths of 27 to 30 feet, with other dimensions commensurate. But more than that, he is an organizer, a builder of smooth-working human machinery.

Mr. Oldham, who has specialized on the blast furnace during his entire industrial career, was born near Hillsborough, N. C. While at the University of North Carolina, from which he was graduated in 1904 with the degree of bachelor of science, he specialized on chemistry. In view of the increasingly prominent role being played by chemistry in blast furnace operation, destiny appears to have been shaping his course.

During a part of 1905 he took a post-graduate course in chemical work, and before the year was out he became chemist at the South Pittsburgh, Tenn., blast furnaces of the Tennessee company. When this plant closed in 1906, Mr. Oldham returned to the Birmingham district. He was placed in charge of the laboratory at the Alice blast furnace, where he remained until 1907, when he was promoted to the superintendency.

After two years he became connected with the Birmingham Coal & Iron Co.'s Vanderbilt furnace, which later was purchased by the Woodward Iron Co. He remained with the Birmingham company until 1913 and then returned to the Tennessee company, in charge of foundry furnaces, including the bessemer division and the Alice stack. He continued as superintendent of foundry furnaces until 1916 and that year was promoted to be superintendent of blast furnaces at the Ensley, Ala., works, the Alice furnace likewise remaining under his jurisdiction. In 1924 he received a further promotion, being then made general superintendent of the Tennessee company's steel works at Fairfield, which position he retained until his recent call to the Republic company.

A summary of Mr. Oldham's character and outlook on life are found in the words of a friend: "His achievements have been self-gained and his success is well-earned."

Men of the Industry

FREDERICK W. BRADLEY, elected president of the American Institute of Mining and Metallurgical Engineers, at its annual meeting in New York, Feb. 20, has had an extended mining experience, confined for the most part to gold and other precious metals. He is president of the Bunker Hill & Sullivan Mining & Concentrating Co., San Francisco, and also is president and director of five or six other mining companies. He likewise serves on the boards of numerous other mining

FREDERICK W. BRADLEY

and financial interests. He is president and director of the Ocean Shore Railroad Co. and a director of the Pacific Steel & Wire Co., Oakland, Calif.

Mr. Bradley was born in Nevada county, California, in 1863. He studied mining at the University of California from 1882 until 1884 and his first affiliation with the mining industry was as assayer at the Eagle Bird mine in Nevada county at the age of 20. Three years later he became deputy surveyor and a year later was made superintendent of the Spanish mine in California, making a record in mining gold ore at 65 cents per ton.

* * *

Lammot du Pont has been elected chairman of the board of the General Motors Corp., Detroit, to succeed Pierre S. du Pont, who resigned. The latter remains as member of the board and a member of the finance committee. Lammot du Pont, 48, is president of E. I. du Pont de Nemours & Co. He is a native of Wilmington, Del., and was educated at Massachusetts Institute of Technology, graduating in 1901 after a course in civil engineering.

* * *

William Lilley, of Lilley Blizzard & Co., Philadelphia, was recently elected president of the Shreveport-El Dorado Pipe Line Co.

* * *

Matthew C. Brush has been elected a member of the board of directors and of the executive committee of the Continental Can Co., Chicago, to succeed the late J. Horace Harding.

* * *

J. R. Sheppard has resigned as chief engineer in charge of the hydraulic machinery department of R. D. Wood & Co., Philadelphia, to become sales engineer of the Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa.

* * *

J. C. Mendenhall, formerly of the purchasing department of the Alan Wood Iron & Steel Co., Philadelphia, is now with Luria Bros. & Co., scrap merchants, being located at its Philadelphia branch, 20 South Fifteenth street.

* * *

George S. Emerson, treasurer of the Hampden Grinding Wheel Co., Springfield, Mass., and Frank S. Hatch, assistant treasurer of the Moore Drop Forging Co., Springfield, have been added to the board of directors of the Western Massachusetts Bank & Trust Co., that city.

* * *

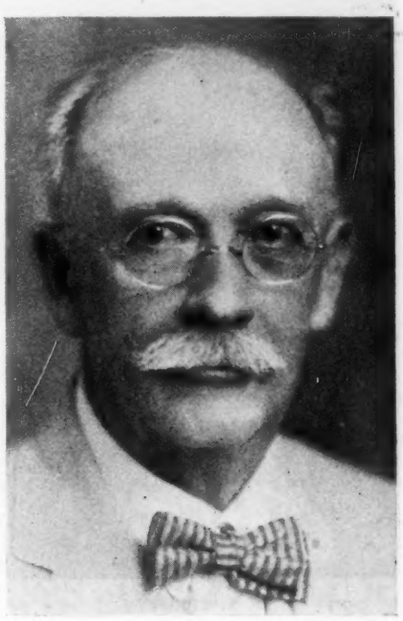
Alexander D. Darragh has opened an office at 17 Battery Place, New York, to specialize in the sale of corrosion and heat resistant steels. Mr. Darragh, until recently, was a member of the sales department of the Ludlum Steel Co. Prior to that he had been with the Consolidated Steel Corp., New York, and before with the Carnegie Steel Co. for some years.

* * *

W. H. Eddy, formerly chief inspector for the Oakland Motor Car Co., Pontiac, Mich., has been made general superintendent, to succeed R. B. Smith, who has been assigned to manufacturing problems. Vern E. Walters succeeds W. H. Vann as master mechanic, Mr. Vann being granted a leave of absence to recover his health. Upon his return he will be appointed chief inspector to succeed W. H. Eddy.

* * *

Dr. Edward Weston, electrochemist and engineer, president of the Weston Electrical Instrument Co., Waverley Park, Newark, N. J., has established the Edward Weston fellowship with the American Electrochemical society, Columbia university, New York. The candidate will be selected by the society, eligibility being based on capacity in carrying out research in



DR. EDWARD WESTON

electrochemistry or its applications. The award is to be made without distinction because of sex, citizenship, race or residence. Research may be carried out at any university or institute approved by the society. The date of the initial award, approximately $1000, has not been definitely established, but probably will be in the fall. Dr. Weston was born in England, May 9, 1850, and located in the United States in 1870, entering the employ of the American Nickel Plating Co. In 1888 he formed the Weston company to manufacture electrical instruments.

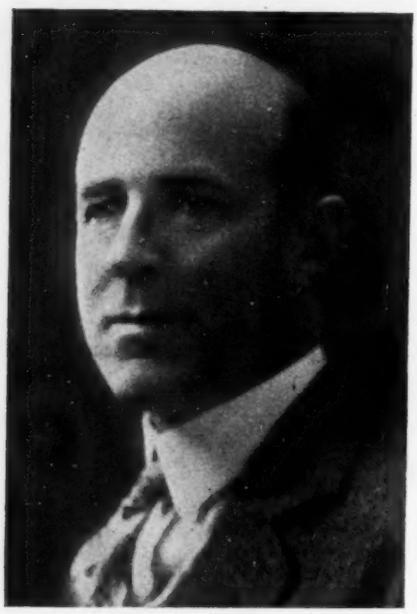
* * *

Thomas A. Dooley, St. Louis district manager of the American Car & Foundry Co., was tendered a golden jubilee dinner by his associates in celebration of his having completed 50 years of service with that company. Mr. Dooley, who is 72, has spent

his business career since 1879 at the St. Louis plant. Removing to St. Louis from Cincinnati, he started as a carpenter for the then Missouri Car & Foundry Co. and worked his way up through virtually every foremanship and superintendency to the position of general manager, which title he has held for more than 25 years.

* * *

J. S. Sprott has been appointed general manager of sales, effective March 1 for the Berger Mfg. Co., Canton, O. Mr. Sprott was educated as a civil engineer at Purdue university and entered sales work in 1913. During the past eight years he was vice president in charge of sales of the General Fireproofing Co., Youngs-



J. S. SPROTT

town, O. Mr. Sprott will direct all sales divisions of the company, which include metal furniture, metal lumber, metal ceilings and many metal building products, corrugated metal culverts, and a large number of special and miscellaneous metal products. The company produces more than 4000 separate items, fabricated chiefly from sheets.

* * *

Karl H. Marsh, chief engineer at the Buffalo plant of the Wickwire-Spencer Steel Corp., has resigned to become chief engineer of the British Empire Steel Corp., with headquarters at Sydney, N. S. From 1919 until 1923 Mr. Marsh was chief engineer of the Dominion Steel Corp., a subsidiary of the British Empire Steel Corp.

* * *

R. D. Oberwetter has been placed in charge of pipe sales of the Bethlehem Steel Co. in the district having Houston, Tex., as its center. His headquarters are at 1807 Post-Dispatch building, Houston. Mr. Oberwetter had been vice president and general manager of the Reading Iron Co. of Texas.

* * *

Edward Carroll, son of J. J. Carroll, C. & G. Foundry Co., Sandusky, O., has joined the sales force of the Great Lakes Foundry Sand Co., Penobscot building, Detroit.

* * *

Ellis W. Ryan, formerly vice president and general manager of the Central Mfg. Co., Connersville, Ind. has been elected a vice president and director of the Auburn Automobile Co., in charge of operations, in that city.

* * *

George P. Rhodes and Irvin F. Lehman, who were elected to the board of directors of the Pressed Steel Car Co., July 25, 1928, have resigned. O. L. Alexander and Charles L. McCune have been elected in their stead.

* * *

J. S. Colbert, affiliated with the Union Drawn Steel Co., Beaver Falls, Pa., for the past six years, has been transferred to its Cleveland office. He takes the place of L. A. Wigley, who has been transferred to the company's Gary, Ind., office.

* * *

W. M. Patterson, formerly first vice president and secretary of the Frick-Reid Supply Corp., Pittsburgh, distributor of oil well supplies, has been elected president, succeeding the late W. E. Frick. Richard T. Frick, formerly treasurer, has been named first vice president and in addition will hold the office of secretary-treasurer.

* * *

H. H. Wood, formerly chief engineer of the Laclede Steel Co., St. Louis, has become identified with the industrial department of the Timken Roller Bearing Co., Canton, O. He will specialize in the application of bearings to steel mill equipment and for the present his headquarters will be at Canton.

* * *

George Bartol, vice president and former president of the Otis Steel Co., Cleveland, was presented Feb. 21 with a platinum watch together with a testimonial resolution in token of his having rounded out a half century of service with the company. The presentation and reading of the resolution was made by E. J. Kulas, president. Mr. Bartol started with the company as chemist in 1879.

* * *

Frank H. Robertson has resigned as president and chief of operations of the Universal Aviation Corp., St. Louis, and also as president of the Robertson Air Craft Corp., a subsidiary.

* * *

Thomas Ahearn has been elected president of the Ottawa Car Mfg. Co., Ottawa, Ont. and W. H. McIntyre has been elected vice president.

* * *

Charles E. Van Norman, president of the Van Norman Machine Tool Co., Springfield, Mass., has also been made treasurer, to succeed the late Frank H. Page.

* * *

V. O. Fishel, treasurer of the Van Dorn Iron Works, Cleveland, was elected vice president and treasurer

E. T. CAUSER

Who as noted on page 562 of IRON TRADE REVIEW of Feb. 21, is the new general manager of the crankshaft division of the Union Drawn Steel Co., Beaver Falls, Pa.

and J. A. Boyden was elected secretary at a meeting of the new board of directors, held Feb. 20. Messrs. Fishel and Boyden, with William J. Fleming and Clifford E. Pierce, had been elected new members of the board and Alfred J. Kroenke had been re-elected a director.

* * *

James J. Curran has been appointed metallurgical engineer of the Harrisburg Pipe & Pipe Bending Co., Harrisburg, Pa. He will be in charge of chemical and metallurgical control and development of carbon and alloy steels, hydraulic and drop forgings and drawn seamless cylinder specialties. Mr. Curran for many years was metallurgist of the Henry Souther Engineering Co., Hartford, Conn. He was born at New Britain, Conn., and attended Worcester Polytechnic insti-

(*Concluded on Page* 631)

British Pig Iron Prices Stronger

Midland Prices Advanced, while Shipments from Middlesbrough Increase—Steelworks Also Active—German Industry Quieter, Operations at 60 to 70 Per Cent—European Rail Manufacturers Renew Agreement

European Headquarters,
IRON TRADE REVIEW,
Caxton House, Westminster, S. W.1

LONDON, Feb. 26.—(*By cable*)—The British iron market is improving. Midland prices are up 1s 6d (36 cents) a ton. Severe weather has interfered with increased output and deliveries. Considerable improvement is reported in the coal trade.

Shipments of pig iron from the Middlesbrough district are ahead of last year. Some sales are being made to melters on the continent. The Middlesbrough steel trade also is busy, especially in shipbuilding material. Barrow rail merchants are active.

New sales of galvanized sheets are smaller but exports remain satisfactory. The market for tin plate is quiet. Orders are being received from the continent.

A report from Berlin today states German iron and steel works are operating at an average of 60 to 70 per cent. Domestic and export business is quieter than in recent weeks, partly due to cold weather. In Belgium less new business is noted, but steelworks are fully occupied and prices remain firm. The Belgian pig iron comptoir will begin operating March 1. Sheet bars are higher, £5 7s ($25.93) per ton being paid for 1000 tons in one transaction. Conditions in the French iron and steel industry are satisfactory. Renewal of the European Rail Manufacturers association's agreement is expected.

British Market Stronger on Moderate Buying

Sterling $4.85

BIRMINGHAM, Eng., Feb. 8.—A stronger tone is evident in the British iron and steel trade, and a growing feeling that the buying movement is not spasmodic.

The improvement in British markets is especially marked in pig iron. In the Midlands where most manufacturers have agreed to charge 2s 6d more ($.60) on all new contracts, more business has been done than for many weeks. Northampton makers adhering strictly to their new price of £2 17s 6d ($13.93) have healthier order books, and one firm at least has booked a 1000-ton order. It will be remembered that a fortnight ago prices were advanced as the result of a meeting of smelters called by Sir Francis Joseph, North Staffordshire. Yesterday the trade was called together again under the same leadership and though the proceedings were private it is understood the gathering had a larger representation than before. The difficulty has been to gather in one or two independent makers in Northamptonshire and Derbyshire who preferred to sell at their own price. It is on this account that the Derbyshire figure of £3 2s 6d ($15.15) has not been paid. Consumers have found that they can buy at £3 1s ($14.79) and nearly all the business has been done at this figure. The Northampton makers, on the other hand, have sold all pig iron in this district at the recognized price but to other districts they are prepared to sacrifice a small amount. The stiffening of Midland prices is being watched with interest in Middlesbrough where the market lately has been under cut rather badly by Northampton and Nottingham producers. Greater activity at the Middlesbrough steelworks has created a scarcity of local pig iron and the makers are in a strong position.

Demand in the Barrow area keeps

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, Feb. 25	*British* Gross Tons U. K. Ports		*French* Metric Tons Channel Ports		*Belgium and Luxemburg* Metric Tons Channel Ports		*German* Metric Tons Rotterdam or North Sea Port	
Export Prices f. o. b. Ship at Port of Dispatch—By Cable								
PIG IRON	£ s d		£ s d		£ s d		£ s d	
Foundry No. 3, Silicon 2.50-3.00	$16.25	3 7 0*	$16.49	3 8 0	$16.49	3 8 0	$16.49	3 8 0
Basic	15.76	3 5 0	15.76	3 5 0	15.76	3 5 0	15.28	3 3 0
Basic-bessemer	17.22	3 11 0†	15.76	3 5 0	15.76	3 5 0	14.55	3 0 0
Hematite, Phosphorus 0.02-0.05	17.46	3 12 0	23.07	590*	.....	.....	17.46	3 12 0
SEMIFINISHED STEEL								
Billets	$30.92	6 7 6	$25.22	5 4 0	$25.22	5 4 0	$25.22	5 4 0
Wire rods	41.83	8 12 6	30.31	6 5 0	30.31	6 5 0	30.31	6 5 0
FINISHED STEEL								
Standard rails	$37.59	7 15 0	$31.53	6 10 0	$31.53	6 10 0	$31.53	6 10 0
Merchant bars	1.68c	7 15 0	1.35c	6 3 0	1.35c	6 3 0	1.35c	6 3 0
Structural shapes	1.60c	7 7 6	1.11c	5 1 0	1.11c	5 1 0	1.12c	5 2 0
Plates, ship, bridge and tank	1.76c	8 2 6	1.38c	6 5 0	1.38c	6 5 0	1.38c	6 5 0
Sheets, black, 24 gage	2.17c	10 0 0	2.23c	10 2 6	2.23c	10 2 6	2.50c	11 7 0
Sheets, galvanized, 24 gage, corrugated	2.96c	13 12 6	3.01c	13 13 9	3.01c	13 13 9	3.43c	15 12 0
Bands and strips	2.17c	10 0 0	1.40c	6 7 6	1.40c	6 7 6	1.49c	6 15 0
Plain wire, base	2.12c	9 15 0	1.71c	7 15 0	1.71c	7 15 0	1.65c	7 10 0
Galvanized wire, base	2.93c	13 10 0	2.17c	9 17 6	2.17c	9 17 6	2.20c	10 0 0
Wire nails, base	2.39c	11 0 0	1.80c	8 3 9	1.80c	8 3 9	1.87c	8 10 0
Tin plate, base box 108 pounds	$ 4.37	0 18 0	.....	.....	.....	.....	$ 6.79	1 8 0

*Francs

Domestic Prices at Works or Furnace—Last Reported			Francs			Francs		Marks
Foundry No. 3 Pig Iron, Silicon 2.50—3.00	$16.01	3 6 0	$18.57	475(2)	$16.68	600	$18.52	78
Basic pig iron	15.76	3 5 0	19.94	510(1)	16.96	610	20.89	88
Furnace coke	3.52	0 14.6	5.87	150	5.14	185	5.11	21.50
Billets	30.92	6 7 6	23.07	590	24.60	885	28.73	121
Standard rails	1.79c	8 5 0	1.46c	810	1.63c	1,250	1.51c	140
Merchant bars	1.68c	7 15 0	1.33c	740	1.42c	1,095	1.52c	141
Shapes	1.71c	7 17 6	1.26c	700	1.22c	940	1.49c	138
Plates, ship, bridge and tank	1.87c	8 12 6‡	1.54c	855	1.46c	1,125	1.71c	158
Sheets, black, 24 gage	2.28c	10 10 0	2.92c	1,620	2.39c	1,835	2.43c	225
Sheets, galvanized 24 gage, corrugated	2.96c	13 12 6	3.69c	2,050	3.84c	2,950	3.78c	350
Plain wire	2.12c	9 15 0	1.94c	1,075	2.08c	1,600	2.48c	230
Bands and Strips	2.17c	10 0 0	1.51c	840	1.72c	1,325	1.77c	164

*Middlesbrough; †Scotch foundry iron; ‡delivered; (1) Basic-bessemer; (2) Longwy. British export furnace coke £0 14s 6d ($3.52) f. o. b. Ferromanganese £21 13s 0d ($105.00) delivered Atlantic seaboard, duty-paid. German ferromanganese £15 0s 0d ($72.90) f. o. b.

The equivalent prices in American currency are in dollars per ton for pig iron, coke, semi-finished steel and rails; finished steel is quoted in cents per pound and tin plate in dollars per box. British quotations are for basic open-hearth steel; French, Belgian, Luxemburg, and German are for basic-bessemer steel.

up well, hematite sales being in excess of output. They have included shipments to France, Germany and Belgium, while some improvement in the buying of low phosphorus iron by America is reported within the last week or so. The steel plants are fully employed and make heavy demands upon the iron furnaces. But new orders are not coming in fast enough to replace the old and unless there is an influx within the next few weeks rolling mills in the Barrow and Workington district will be able to work only intermittently. The rail mills are engaged upon large orders for delivery some months ahead.

Pig iron producers in Scotland have decided on fixed minimum prices, agreeing not to sell foundry No. 3 below £3 11s ($17.20) and forge iron £3 10s ($16.97) per ton f.o.t. at makers' works.

In common bars for nuts and bolts and cable making, the trade has nearly been extinguished by the dumping of Belgian iron bars, though these are often found to consist mainly of steel. Nut and bolt makers, however, contend they have been forced to import this material, especially as at one time they could save £3 ($14.55) on every ton they bought. Today's Continental prices, however, and the stagnation in the nut and bolt industry consequent upon scarcity of wagon building orders have brought a drop in the tonnage of foreign steel and iron coming into the district. In semifinished products the margin has been narrowed until there is a difference of only 5s ($1.21) in favor of foreign steel.

South Wales steelworks are absorbing larger quantities of steel scrap and supplies are scarce. Prices have hardened to £3 11s ($17.20) and £3 12s ($17.44) delivered South Wales. The prosperity of the galvanized sheet industry is maintained and a firm attitude is taken in regard to prices now standing at £13 12s 6d ($66.06) basis. A regular trade is being done with Australia and New Zealand, but the Indian warehouses which have been overstocked have not shown any inclination to come into the market.

French Iron Output in 1928 a Record

Paris, Feb. 4.—(*European Staff Service*)—French production of pig iron in 1928 reached the highest mark in the industrial history of the country, at 10,097,000 metric tons, against 9,297,415 tons in 1927, an increase of 8.7 per cent. The highest monthly output on record was attained in December. The December output was composed of 692,000 tons of basic bessemer, 108,000 tons of phosphorus foundry, 5000 tons of phosphorus gray forge, 37,000 tons of hematite foundry, 19,000 tons of hematite forge pig iron and 19,000 tons of ferro-alloys.

The output of steel ingots and castings in France in 1928 also exceeded all previous records, at 9,387,000 metric tons, compared with 8,275,297 tons in 1927, an increase of 13.5 per cent. The record figure for the year was reached in October with 834,000 tons. The December output included 812,000 tons of ingots and 16,000 tons of castings; it was composed of 575,000 tons of basic bessemer, 234,000 tons of open-hearth, 12,000 tons of electric, 5000 tons of acid bessemer and 1000 tons of crucible steel.

Figures are as follows:

Mon. ave.	Act. Fur. on last day	Pig iron	Steel ingots and castings
1913	131	433,940	390,580
1925	148	707,840	620,540
1926	155	785,965	702,500
1927	142	774,785	689,610
1928	153	841,415	782,995
1928			
Jan.	144	809,000	753,000
Feb.	149	784,000	738,000
March	149	857,000	806,000
April	150	834,000	736,000
May	150	868,000	794,000
June	148	843,000	797,000
July	148	836,000	751,000
Aug.	150	858,000	793,000
Sept.	149	821,000	757,000
Oct.	150	857,000	834,000
Nov.	152	850,000	800,000
Dec.	153	880,000	828,000
Total		10,097,000	9,387,000

French Coke Total High

Paris, Feb. 4.—(*European Staff Service*)—Total output of coke at French collieries during 1928 reached 4,399,932 metric tons, compared with 4,068,208 tons in 1927. The highest monthly production on record was that of December, 1928.

December exports went principally to Italy, 36,227 tons, Switzerland, 10,788 tons, Belgium, Luxemburg, and Spain.

Comparisons are as follows:

Mon. ave.	Production	Imports	Exports
1913	335,620	255,835	17,085
1925	255,410	416,880	39,440
1926	313,950	462,915	39,320
1927	339,015	395,580	33,430
1928	366,660	447,330	34,810
1928			
Jan.	357,475	473,018	25,840
Feb.	343,186	411,455	23,119
Mar.	369,360	445,656	15,324
Apr.	360,446	482,575	22,689
May	367,725	526,593	12,366
June	360,141	489,144	30,507
July	370,259	427,291	42,342
Aug.	363,579	445,299	47,243
Sept.	354,411	425,073	44,240
Oct.	386,229	405,889	45,183
Nov.	379,701	418,585	57,505
Dec.	387,420	417,369	51,415
Total	4,399,932	5,367,947	417,743

Belgian Trade Heavy

Brussels, Feb. 8.—(*European Staff Service*)—Foreign trade returns giving import and export figures for iron and steel for the Belgo-Luxemburg economic union in November, 1928, indicate that imports of pig iron, including scrap, during that month were the highest on record. Imports of steel, including scrap, also reached their highest mark. The principal items of steel imported were blooms, billets, slabs and merchant bars, to the extent of 17,184 tons.

Figures are as follows:

	IMPORTS		EXPORTS	
Mon. ave.	Pig iron	Steel	Pig iron	Steel
1925	27,095	15,860	8,060	242,325
1926	27,505	27,265	13,105	304,075
1927	31,760	27,715	11,350	387,415
1928				
Jan.	37,625	34,357	6,793	289,854
Feb.	40,293	37,481	7,952	401,502
March	43,612	31,294	11,971	458,377
April	36,769	29,203	9,583	325,728
May	36,506	31,971	15,317	338,052
June	44,314	33,793	7,484	382,700
July	42,305	35,409	7,367	344,977
August	45,589	39,329	7,716	294,781
Sept.	52,784	39,233	5,189	321,731
Oct.	55,173	45,481	6,259	432,181
Nov.	56,900	47,164	7,425	349,191

Belgian Steel Market Stationary; Semifinished Scarce and High

Office of IRON TRADE REVIEW,
Prince's Chambers, Corporation St.

BRUSSELS, Feb. 8.—(*European Staff Service*)—Conditions in the Belgian iron and steel market are stationary and there has been no substantial change in prices during the past week, except for semifinished steel, for which demand considerably exceeds the tonnage available on the market. The volume of inquiry from Great Britain is considerable, but few orders are accepted by makers, with the exception of about 1000 tons of sheet bars which were sold at £5 3s ($25). Later, buyers increased offers to £5 5s ($25.50) without being able to place their orders. Offers of £4 15s ($23.05) for 6-inch blooms have been rejected, and 2-inch billets can be obtained only in small quantities from Germany; consequently the price of billets is purely nominal and is assumed to be about £5 3s 6d ($25.10). Skelp is £6 5s ($30.30).

Business in merchant bars is quiet. The price remains at about £6 4s ($30) and those works that demand £6 5s ($30.30) have difficulty in finding purchasers. Beams are quoted at £5 1s ($24.50) and £5 1s 6d ($24.60) for normal sizes and £5 3s ($25) for British sizes. It will be noted that these prices are less than the price of billets. Plates are quoted at £6 6s ($30.50) for $\frac{3}{16}$-inch sizes, and $\frac{5}{32}$-inch sheets are £6 14s ($32.50), while

Franc—2.78c

1/16-inch sheets are £6 16s ($33). Galvanized sheets 1 millimeter thick are £13 ($63).

The wire rod syndicate has established the basis price of £6 5s ($30.30) for export, but this price is modified according to destinations. For Japan the price quoted is £7 18s 6d ($38.60) c.i.f. Kobe, Yokohama and Hong Kong. For Shanghai and Osaka there is an extra 2s 6d (60.00c) per ton. These prices are for basic bessemer steel. For extra soft basic bessemer steel there is an extra of 3s (73.00c); for soft open-hearth steel the extra is 8s ($1.94), and for extra soft open-hearth steel the extra is 15s ($3.64). With regard to sizes, the base price is quoted for round rod less than 6 millimeters diameter, there is an extra of 2s 6d (60.00c) for sizes between 6 and 8 millimeters and an extra of 5s ($1.21) between 8 and 13 millimeters. For square rod there is a supplementary extra of 5s ($1.21).

Improvement in the coal market continues. Demand for industrial coal is active and prices are higher than in January. There is an increase of 5 francs (14.00c) for industrial coal. Supplies of coke now are becoming restricted.

Here and There in Industry

Timely Information Which Records Developments in Various Lines of Productive Enterprise

HYDRAULIC PRESSED STEEL DIVISION of the Truscon Steel Co., located in Cleveland, is improving and enlarging its plant. Forty large presses have been installed, annealing furnaces, welding equipment, hot and cold rivet lines have been added. This plant is devoted to automotive and miscellaneous pressed steel and deep drawn parts, skid platforms and tote boxes, steel foundry flasks and belt conveyor idlers. Harry Woodhead is general manager and Frank Obenberger works manager.

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CROWN MACHINE CO., Indianapolis, has changed its name to Crown Products Co.

* * *

STANDARD STEEL WORKS, Kansas City, Mo., has opened a sales office at Tulsa, Okla., in charge of Earl Dunigan.

* * *

EAST ST. LOUIS CASTING CO., East St. Louis, Ill., announces plans for new foundry additions costing $200,000. Ralph M. Hill is president.

* *

TRIAD MFG. CO., Pawtucket, R. I., is installing machinery for the manufacture of radio tubes and supplies. William W. Moss, E. B. Arnold and Thomas M. Black Jr. are incorporators.

* * *

BANTAM BALL BEARING CO. of Indiana and Connecticut has been taken over by Karl Hermann, who has bought control. Operations of the company will be concentrated at South Bend, Ind. Mr. Hermann is consulting engineer for the Studebaker Corp.

* * *

GEUDER, PAESCHKE & FREY CO., Milwaukee, has appointed E. H. Wood, 220 Delaware avenue, Buffalo and Charles E. Davis, 888 The Arcade, Cleveland, representatives in their respective territories for the company's stamping, forming and pressed metal departments.

* * *

KNAPP-MONARCH CO. has been formed by a consolidation of the A. S. Knapp Co., Kansas City, Mo., manufacturer of electrical equipment, and the Monarch Co., Webster City, Iowa, manufacturer of sheet metal products. Headquarters will be established in St. Louis.

* * *

E. I. DU PONT DE NEMOURS CO. has increased its western investments by the purchase of a substantial interest in the local plant of the Pacific Ammonia & Chemical Co., 2224 Northlake avenue, Seattle. Officials announce that the plant will be enlarged as conditions warrant.

* * *

CLYDE TRANSPORTATION CO., Pittsburgh, has ordered a new steel towboat to be known as the WALTER WINDSOR for barge trade between Pittsburgh and Memphis. The new steamer, to cost $300,000, will be 180 feet long with a beam of 36 feet. The Marietta Mfg. Co., Point Pleasant, W. Va., will build it.

* * *

LYONS IRON WORKS INC. is the the new name adopted by F. P. Lyons Iron Works Inc., Manchester, N. H. Officers have not been changed. H. G. Worrell is president and general manager, G. A. Phelps treasurer, C. W. Phelps secretary and assistant treasurer, and P. W. Sherman credit and assistant manager.

* * *

PORT ANGELES & WESTERN RAILROAD, built by the government during the war to tap the timber resources of the Olympic peninsula, has been bought by Joseph Irving and associates, Everett, Wash. The new owners intend to open new timber tracts for logging and serving manganese mines as well as to foster establishment of pulp and paper plants.

* * *

STUTZ-BELLANCA AIRPLANE CORP. has been organized to build large and small airplanes at Bridgeport, Conn., and Orlando, Fla. It will be incorporated in Delaware. Henry C. Stutz, formerly president and general manager of the Stutz Motor Car Co., will be president and Frank Bellanca vice president. Joseph Cubelli will be secretary-treasurer.

* * *

AMERICAN LEAD CO., has blown in its first blast furnace in Indianapolis and started a schedule of operation which will produce 1500 tons of refined lead per month. The company is headed by Walter C. Marmon, Howard C. Marmon, G. M. Williams, all formerly with the Marmon Motor company, Normal A. Perry, L. M. Wainwright, Hugh McK. Landon, and others.

* * *

MULTICELL RADIATOR CORP., Buffalo, with capital of $1,000,000, has been organized with Frank A. Abbott, secretary. The company will manufacture copper radiators and boilers by a new process. William G. Frazer, president of the Power Efficiency Corp., will be president. The company will build or lease a plant in the Niagara frontier district, starting production in the early spring.

* * *

LEFERE FORGE MACHINE CO. has been formed at Jackson, Mich., and will build a plant on Grand river, on a site of nine acres. The plant will contain five buildings, forge shop, tool and die shop, boiler building, garage and office building. Alidor Lefere is president and general manager, H. V. Lefere and G. I. Merrell vice presidents and E. C. Hetherwick secretary and treasurer.

* * *

SONATRON TUBE CO., Newark, N. J., manufacturer of electrical and radio equipment, has leased a 5-story building at Central avenue and Fillmore street, Chicago, with option to purchase the property and adjoining vacant property. The Sonatron company will occupy the building and it is understood another will be erected. The firm will employ 1500 persons in its Chicago plant, with a daily output of 40,000 tubes.

* * *

INDIANAPOLIS FOUNDRYMEN'S ASSOCIATION has elected Frank S. O'Neil, manager of the Indianapolis plant of the Link-Belt Co., president for 1929. Guy E. Street, American Foundry Co., was re-elected vice president and James H. Hooker, Sinker-Davis Co., treasurer. Andrew J. Allen was elected secretary for the sixteenth year. T. J. Cornwell, Peerless Foundry Co., and J. B. Lewis, Federal Foundry Co., were re-elected to the executive committee.

* * *

NATIONAL AERO CORP., 100 East Forty-second street, New York, has bought a controlling interest in Murray & Tregurtha Inc., Quincy, Mass., which has been incor-

porated recently. Air-cooled aviation motors will be added to the company's production and marine motors will be continued as in the past. E. S. Cameron is president of Murray & Tregurtha, John A. Murray vice president and James W. Cox Jr. treasurer. Directors are L. C. Coggan, Frank W. Carpenter, Will I. Ohmer and Walter Greene.

* * *

DOMINION BRIDGE CO., Montreal, Que., has increased its board of directors by three and has elected the following to new positions: J. W. McConnell, Montreal; W. G. Murrin and W. J. Blake Wilson, Vancouver, B. C.

* * *

ALGOMA STEEL CORP., Sault Ste. Marie, Ont., has completed the rolling of a special order of several thousand tons of intermediate manganese rails for the Canadian National Railways. Further substantial orders for this type of rail are expected.

* * *

GENERAL ELECTRIC CO. has booked for its plant at Pittsfield, Mass., an order for 21 large transformers for the Grafton Power Co., a subsidiary of the New England Power Co., on the first 220,000-volt system in New England. They will be installed at Inwood, Vt., on the line to Tewksbury, Mass.

* * *

INDIANA LIME & STONE CO., a subsidiary of Inland Steel Co., Chicago, has announced plans for the development of a large quarry near Manistique, Mich., for the production of chemical and metallurgical limestone. It is expected the quarry will be producing late next year. Work will start this spring on the construction of a new harbor near this quarry.

* * *

HARSHAW CHEMICAL CO. is the new name of the Harshaw Fuller & Goodwin Co., 1610 Hanna building, Cleveland. Officers elected recently are: President, W. A. Harshaw; vice presidents, R. S. and W. R. Wensley, W. J. Harshaw and O. J. Hall; secretary and treasurer, Drake T. Perry. The company has plants at Cleveland, Philadelphia and Elyria, O. A change in the company's financial structure has been made.

* * *

DIXIE FOUNDRY CO., Cleveland, Tenn., which suffered damage by fire to its warehouse and steel assembling room, necessitating rebuilding, is operating on full time basis. Rebuilding of the burned structures is being carried on rapidly and will be complete in 30 to 40 days. It will cover 2½ acres and is of steel, brick and glass, with sprinkler protection. Warehouse space has been rented temporarily, to allow full production.

* * *

WASHBURN WIRE CO., Phillipsdale, R. I., and Worcester, Mass., has re-elected Frank N. Phillips, president, F. C. Weidenmiller vice president, Fuller F. Barnes treasurer, J. E. Hayward controller, W. C. Ingerson secretary, and A. R. Palmer counsel. Directors include the officers, Donald E. Jackson, Thomas Wray and J. B. Moff.

Independent Sheet Sales Show Large Gain

Sheet sales, production and shipments by independent mills in January showed substantial increases over December, according to the National Association of Flat Rolled Steel Manufacturers. January sales amounted to 438,390 tons, a gain of 114,969 tons. January production totaled 391,404 tons, 89,222 tons more than in December. Shipments amounted to 362,229 tons, an increase of 65,542 tons over December. The association's full report for January follows:

	Sales	Production	Shipments
January, 1927	261,357	256,856	239,019
February	241,951	282,171	261,412
March	345,900	359,340	338,436
April	292,965	316,100	300,858
May	212,337	309,360	302,759
June	224,321	300,706	281,395
July	230,715	237,243	252,034
August	177,647	266,645	266,713
September	258,427	220,919	230,443
October	234,358	245,765	232,626
November	344,519	232,041	224,789
December	530,197	260,130	221,689
January, 1928	302,921	316,541	274,126
February	266,210	330,565	298,420
March	399,441	366,127	359,532
April	284,070	327,909	327,674
May	250,316	349,367	326,324
June	318,902	311,629	308,741
July	333,357	267,685	278,310
August	254,397	329,396	324,691
September	370,936	318,907	322,876
October	344,614	369,243	354,925
November	346,041	358,402	307,790
December	323,421	302,182	296,687
January, 1929	438,390	391,404	362,229

A comparison for two years is afforded by the following table:

	Net tons	Percentage of capacity
Total sales for month	438,390	123.1
Total production	391,404	109.9
Total shipments	362,229	101.7
Unfilled tonnage as of Feb. 1	652,602	183.2
Approximate finished stock on hand awaiting shipments	135,135	37.9
Approximate in stock, unsold	63,739	17.9

Total number of hot mills in the United States is 725 having a capacity for January, 1929, of approximately 507,500 net tons, and the percentage of the capacity to which the figures shown are related, is 70.2.

Bay View Mills Resume

Bay View mills of the Illinois Steel Co. at Milwaukee, which virtually closed down Jan. 1 after intermittent operation for several years, have been reopened with a force of 450 men for an indefinite run on special orders, to relieve the pressure on Illinois mills at Chicago, Joliet and Gary. According to John D. Maurer, general superintendent of the Bay View plant, there is a month's work in sight on special orders for small rails. It is expected that new orders will develop to keep the mills on.

American Sheet Furnace Popular Abroad

Six continuous pair furnaces designed by the Costello Engineering Co., Oliver building, Pittsburgh, now are being erected in various sheet mills in Germany. Two are being installed by Wissener Eisenhutte in Wissen, two by Nachbestellung Stahlwerken vom Eichener Walzwerke, Eichen, and two by Capito & Klein A. G. in Benrath. Two Costello-type pair furnaces have been installed in the hot mill department of Compagnie Des Forges De Chatillon Commentry & Neuves-Maisons in France and one each at the plants of W. Gilbertson & Co., Nr. Swansea, Wales; Ebbw Vale Steel, Iron and Coal Co., Ebbw Vale, Wales; and Vereingten Stahlwerken, Kreuztal, Germany.

Inland Will Add Bar and Sheet Mills

Chicago, Feb. 26.—Improvements announced by the Inland Steel Co. for its Indiana Harbor, Ind., works include a 10-inch bar mill, a new jobbing mill and a six-story office building to house the offices of the general superintendent, purchasing department, mill accounting, paymasters, engineering departments and drafting rooms.

The 10-inch bar mill will be a combination continuous and cross country one. It will be adjacent to the company's present 14-inch bar mill. The new jobbing mill will be in the present sheet mill department and will roll sheets up to 72 inches wide.

The Inland company is now building 74 Becker type Koppers coke ovens.

Plans New Strip Mill

Chicago, Feb. 26.—Illinois Steel Co. plans to begin work soon on a new strip mill at Gary, Ind., and will make improvements in other strip mills at the Gary works. It is understood output will be increased 20,000 to 25,000 tons monthly.

Marion Craftsman Tool Co., Marion, Ind., has reduced the number of its directors from five to three.

Men of Industry

(*Concluded from Page* 626)

tute and Cornell university. During the war he acted as chemist and metallurgical inspector of war materials. He is a member of the American Society for Steel Treating, the American Foundrymen's association and the Iron and Steel institute of Great Britain.

* * *

Thomas J. Bray Jr., assistant general superintendent of the Republic Iron & Steel Co., Youngstown, O., since April, 1928, has resigned effective March 15, to become identified with the sales department at Chicago of the Koppers Construction Co.

* * *

Leonard J. Buck, president, Leonard J. Buck Inc., New York, importer and supplier of ores and raw materials for the iron and steel industry, has been elected a director of the Amstea Societe Anonyme, Paris, France. Mr. Buck's company is the American representative of the French company for the export to Europe of American iron and steel products.

* * *

Arthur Purnell, Pittsburgh district sales manager for the Youngstown Sheet & Tube Co., Youngstown, O., for the past two years, has been transferred to Chicago to succeed the late B. T. Bechtel. Mr. Purnell has been affiliated with the company for 23 years. He was assistant district manager at New York for eight years and then was transferred to Boston, where he remained for more than four years, thence removing to Pittsburgh.

* * *

R. R. Baxter, assistant to the vice president in charge of construction, Tennessee Coal, Iron & Railroad Co., Birmingham, Ala., has been made general superintendent of the company's Fairfield steelworks. He succeeds W. H. Oldham, who resigned recently to go with the Republic Iron & Steel Co.

A. B. Haswell, chief engineer of the Tenness company with offices at Ensley, Ala., succeeds Mr. Baxter. R. D. Osgood, assistant chief engineer, in turn succeeds Mr. Haswell.

* * *

Addison McGarrett, formerly with the Niles Tool Works Co., Hamilton, O., is now with the Pratt & Whitney Co., Hartford, Conn., where he is manager of the recently formed agency sales department. Mr. McGarrett has been with the Niles company for more than 25 years, of which time he spent about 15 years traveling in New England, New York and Ohio, and five years as manager of the Rochester branch office which he established.

Robert P. Brinkman, who assisted Mr. McGarrett at Hamilton, is likewise affiliated with him at Hartford.

* * *

Henry Bost, superintendent of the open-hearth furnaces at the Lakeside plant of the Otis Steel Co., Cleveland, has just completed 32 years of service with that company. He has been making steel for 45 years. Prior to locating in Cleveland, he was employed at the Homestead, Pa., plant of the Carnegie Steel Co., Pittsburgh, having aided in pouring the first "heat" there 45 years ago.

* * *

Edward Manhard, vice president of the Rock Island Bridge & Iron Works, Rock Island, Ill., was recently elected president to succeed Walter A. Rosenfield, now chairman of the board. Mr. Rosenfield practically retired from the business six years ago and in the interval Mr. Manhard has been acting head of the company. H. A. Kneisley succeeds Mr. Manhard as vice president W. G. Murphy is secretary and M. S. Carlson treasurer.

Obituaries

BENJAMIN L. SOMMER, 49, chairman of the Keystone Steel & Wire Co., Peoria, Ill., and president of the Mid-States Steel & Wire Co., Crawfordsville, Ind., died Feb. 8 in Florida. Mr. Sommer's father, Peter Sommer, founded the Keystone company. The son began his career in the small plant at Tremont, Ill., as a spooler. Prior to his election as chairman in April, 1928, he had served as president for many years. The Mid-States company was formed last year, representing a merger of Crawfordsville Wire & Nail Co., Crawfordsville, Ind., Dwiggins Wire Fence Co., Anderson, Ind., and Adrian Fence Co., Adrian, Mich. When his brother, John Sommer, died shortly after the merger, Benjamin L. Sommer became president. Another brother, William H. Sommer, is president of the Keystone company.

* * *

Charles E. Stricker, 61, president of the Standard Plating Co., Cleveland, died Feb. 18 in Miami, Fla.

* * *

William T. McCreavy, president of the Schuylkill Forge Co., Philadelphia, since its organization in 1907, died Feb. 11.

* * *

Robert P. Smith, 62, president of Smith Drum & Co., Philadelphia, machinery dealers, died Feb. 10 in Florida.

* * *

Patrick J. Barrett, 68, superintendent of transportation and labor for the Republic Iron & Steel Co., Youngstown, O., died at his home in that city Feb. 6, after a week's illness of pneumonia. He had been with the Republic company more than half a century. He was born in Scotland but located in Youngstown 54 years ago. He began work with the bessemer plant of the Brown-Bonnell Co.

* * *

James A. Allardice, superintendent of the Stark rolling mill of the Central Alloy Steel Co., Canton and Massillon, O., died Feb. 19. Mr. Allardice resigned Jan. 1 as chairman of the Canton civil service commission to devote his entire attention to the steel industry.

* * *

Albert J. Loeffler, 50, treasurer and director of the Hanlon-Gregory Galvanizing Co., Pittsburgh, and the Tri-Lok Co., Pittsburgh, died Feb. 19 in that city. He was a director of the Oakland Savings & Trust Co., and a member of the law firm of Schreiner & Loeffler.

* * *

William Whitmore Penfield, 67, president and treasurer, William W. Penfield Inc., Stamford, Conn., manufacturer of metal goods, died Feb. 17 following a long illness. He was born in New Haven, Conn., and 12 years ago established William W. Penfield Inc.

* * *

Edward Lupton, 63, president of David Lupton's Sons Co., Philadelphia, large manufacturer of steel window sash, display racks and other sheet steel products, died at his home in Jenkintown, Pa., Feb. 21, after an illness of nearly a year. Mr. Lupton was a past president of the Builders Exchange of Philadelphia, and was third vice president of the Ornamental Iron and Bronze Association of America. He was a member of the Union League, Manufacturers' and Philadelphia Yacht clubs of Philadelphia.

CONSTRUCTION *and* ENTERPRISE

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East Central

BLOOMINGTON, ILL.—Citizens' Water Supply Inc., M. B. Hayes chairman of water board, Bloomington, will take bids March 5 on the construction of a water purification plant and dam on Money creek.

CHICAGO—Schlangen Bros. Co., 2435 Irving Park boulevard, manufacturer of hardware, miscellaneous brass goods, etc., plans the construction of a 3-story manufacturing plant.

CHICAGO—Presbyterian Theological Seminary, 2330 North Halsted street, plans the construction of a power plant as part of an extensive building program.

CHICAGO—Johnson & Meier Co., 646 North Michigan avenue, manufacturer of wrought iron, has awarded the general contract for the construction of a 1 and 2-story manufacturing plant to Salomon-Waterton Co.

CHICAGO—Federal Pipe & Supply Co., 900 South Campbell avenue, T. A. Callaghan general manager, plans the construction of a 3-story pipe fabricating and bending plant. Graham, Anderson, Probst & White, 80 East Jackson boulevard, are architects.

NORTH CHICAGO, ILL.—Waukegan Foundry Co., Twenty-second street and Commonwealth avenue, suffered damage by fire recently.

ANDERSON, IND.—Orin Welsh Aircraft Co. plans the construction of a group of buildings for an airplane manufacturing plant.

ELKHART, IND.—Loshblough-Jordan Tool & Machine Co. suffered damage to its plant in a recent fire. The company manufactures a line of punch presses for the sheet metal industry. Plans for reconstruction are being made. James C. Jordan is secretary, treasurer and general manager.

FT. WAYNE, IND.—Steinite Radio Co. has awarded the contract for structural steel for a building to Rochester Bridge Co. (Noted Feb. 21.)

HAGERSTOWN, IND.—Perfect Circle Piston Ring Co. plans the construction of a 3-story building to provide 18,000 additional square feet of floor space. This building will be the first unit of a new group planned by the company. The second unit will be added within the next six months and the third a year afterwards.

INDIANAPOLIS—C. & G. Potts & Co., George J. Potts president, 816 West Washington street, has let the general contract for the construction of a 1-story machine shop to Mothershead & Fitton Construction Co., 960 North Penn street.

MARION, IND.—U. S. Radio & Television Co., A. Case president, plans the construction of a group of plant buildings.

MUNCIE, IND.—Barclay Mfg. Co., incorporated recently, advises that it plans to continue manufacturing sheet metal specialties, stampings, tools, etc. Additional building is planned in the spring and some new equipment will be required.

NEWCASTLE, IND.—Chrysler Corp., Highland Park, Mich., plans the construction of an addition, 160 x 300 feet, to its plant here, to take care of its expansion program in the front axle and automatic departments.

SOUTH BEND, IND.—Studebaker Corp.'s foundry department received an appropriation to provide for the purchase of machinery needed in an expansion program which calls for an increase in gray iron production.

COLDWATER, MICH.—Michigan state public school, C. F. Ramsey superintendent, East State street, contemplates the construction of a heating and power plant.

DETROIT—Coney Hanger Co., 3956 Grand River avenue, incorporated recently, advises that it already has a plant where it manufactures wire garment hangers. (Noted Feb. 21.)

DETROIT—Warner Aircraft Corp., manufacturer of airplane motors, has purchased a 6-acre site where it will erect its manufacturing plant immediately. (Noted Feb. 14.)

DETROIT—Bids have been taken for the construction of an addition to the aircraft building of the Packard Motor Car Co. Albert Kahn is architect for the project.

DETROIT—Contract for the construction of an assembly and shipping building on Conant avenue for the Thompson Products Co., 2196 Clarkwood road, Cleveland, has been awarded to DeHamel Construction Co., Cleveland. (Noted Feb. 14.)

JACKSON, MICH.—Macklin Co., manufacturer of grinding wheels, has started construction of two kilns to provide increased production facilities for 1929.

JACKSON, MICH.—Lefere Forge Machine Co. plans the construction of a forging and metal-working plant on a 9-acre site adjoining the plant of the American Gear & Mfg. Co. Buildings to be erected include a main forge shop, tool and die shop, boiler building, garage and office building. Automobile parts will constitute the major portion of the company's products.

NORTHVILLE, MICH.—Northville Laundry Co. plans the construction of a laundry and boiler house. Plans will be ready for bids about March 1.

CLEVELAND—National Telephone Supply Co., 5100 Superior avenue, has awarded the general contract for the construction of a 1-story plant addition to Sam W. Emerson Co., 1836 Euclid avenue, Cleveland.

CLEVELAND—Cleveland Cap Screw Co., 2921 East Seventy-ninth street, plans to build a plant addition and is having the work handled by H. M. Morse & Co., architects and engineers.

CLEVELAND—Rex Metal Parts Co., 1431 Twenty-eighth street, has purchased one of the buildings of the Baker-Raulang Co. The Rex company manufactures fenders and body panels and an increase of business necessitated the purchase. The old plant will be remodeled and devoted exclusively to repair work.

CLEVELAND—One of the former plants of the Variety Iron & Steel Works Co., Hamilton avenue northeast, near East Fortieth street, has been purchased by the Elwell-Parker Electric Co., 4241 St. Clair avenue northeast, and will be held for future expansion of the Elwell-Parker company.

MARIETTA, O.—National Casting Co. suffered damage to its plant, patterns and machinery in a recent fire.

ORRVILLE, O.—Board of public affairs, A. D. Webster superintendent, plans the construction of a boiler house addition for a municipal light plant. Hadlow, Hughes, Hick & Conrad, 850 Euclid avenue, Cleveland, are engineers.

MANITOWOC, WIS.—Bids are being taken until March 14 by the public utilities commission, 817 Franklin street, for furnishing two 800-horsepower pressure boilers, with stokers or pulverized fuel firing equipment, and one 5000-kilowatt turbo-generator with condenser and auxiliary equipment for a municipal light and power plant improvement. A. H. Zander is city clerk.

MILWAUKEE—Worden-Allen Co. has received the general contract for building a brick and steel plant addition, 149 x 199 feet, for the Globe Electric Co., 14 Keefe avenue, Milwaukee. The latter company manufactures storage batteries, radio receivers and other similar merchandise.

MIWAUKEE—Milwaukee Corrugating Co., which recently acquired the Eller Mfg. Co., Canton, O., announces that it is starting improvements and additions which will provide 50,000 square feet of extra floor space. The line of products at the Eller plant is to be enlarged to include metal lath, and allied products, rain-carrying equipment, furnace pipe and fittings, stove pipe and elbows, and metal ceilings and roofing tile.

Resale News

TWO plants of the E. H. Stafford Mfg Co., located at Ionia, Mich., and Paxton, Ill., were sold at court auction to New York financial interests, for $180,000. Bankers of Ionia bid $178,000 for the property.

* * *

Williams Foundry & Machine Co., Akron, O., has been sold by Frank E. Holcomb, receiver, under court order, to the National Foundry Co., Erie, Pa. The price is $213,000, of which $175,000 is paid on confirmation, in cash, and the remainder in 30 days.

RACINE, WIS.—A 1-story shop addition, 37 x 63 feet, is being built by E. C. Stryberg, general machinist, at 210 DeKoven avenue.

WEST BEND, WIS.—A new plant with about 20,000 square feet of area will be erected here in the spring by the Metal Stamping Corp., now in smaller quarters here. The concern manufactures automobile stampings principally. C. P. Davey is general manager.

North Atlantic

BRIDGEPORT, CONN.—Consolidated Ashcroft Valve Co. Inc., 11 Elias street, has awarded the general contract for the construction of a 1-story manufacturing plant, 45 x 260 feet.

BANGOR, ME.—Bangor Hydro Electric Co., Harlow street, plans the construction of a plant unit, 75 x 90 feet.

BALTIMORE—Glenn L. Martin Co., Leland and Ponca streets, C. A. VanDusen vice president in charge, is finishing preliminary plans for the construction of a 1 and 2-story airplane manufacturing plant.

ALLSTON, MASS.—Arcarn Spring Co., 229 Brighton avenue, plans the construction of an addition and alterations to its plant.

BOSTON—Poole Rotary Valve Engine Co., H. H. Chandler treasurer, incorporated recently, advises that it is in the experimental stage of manufacturing a rotary valve engine. No plant will be built nor equipment bought at the present time. (Noted Feb. 9.)

LYNN, MASS.—North Shore Cutting & Die Co., 266 Broad street, plans the construction of a 1-story plant including power and transformer house. B. E. Porter, 75 Tremont street, Boston, is engineer for the project.

WORCESTER, MASS.—Aulenback Tool Co., Brooklyn building, incorporated recently, advises that it will manufacture boring tools and that it has its equipment nearly all installed. (Noted Feb. 21.)

PERTH AMBOY, N. J.—Standard Underground Cable Co., 26 Washington street, plans the construction of a 1-story plant.

AUBURN, N. Y.—Water Department No. 7 is taking bids until March 4 on the construction of a pumping station addition. J. F. Donovan is city manager.

BROOKLYN, N. Y.—United Metal Box Co., 473 President street, plans the construction of a 2-story manufacturing plant addition. M. J. Harrison, 63 Park Row, is architect.

COLONIE, N. Y.—Albany Charities commission, L. M. Doody, city hall, Albany, is taking bids until March 12 on the construction of a power house and administration building.

LONG ISLAND CITY, N. Y.—Famous Players-Lasky Corp., 1501 Broadway, New York, plans the construction of a 2-story machine and carpenter shop. C. C. Hamilton, same address, is architect.

LONG ISLAND, N. Y.—Manhattan Perforated Metal Co. has recently sold its property in Manhattan and will move into a newly-acquired building here on Hulst street, South of Foster avenue.

NIAGARA FALLS, N. Y.—Union Carbide & Carbon Corp. has begun construction of a laboratory and research building at its plant here. Laur & Mack Contracting Co., Niagara Falls, has the contract for a 1-story building, 75 x 220 feet.

CHESTER, PA.—Philadelphia Electric Co., Ninth and Samson streets, Philadelphia, A. V. Coe secretary, plans the construction of a gas manufacturing plant. (Noted Feb. 21.)

OIL CITY, PA.—Manion Steel Barrel Works, Rouseville, plans the construction of a cooperage plant here.

PHILADELPHIA—A 2-story building, 147 x 200 feet, is being erected by C. O. Sephness at Belle Plaine and Kilpatrick avenues, to be used for the manufacture of chemical supplies.

PHILADELPHIA—Nordendale Mfg. Co., 1638 North Pauline street, metal stamping, has purchased property at Hoyne avenue and Fulton street, 48 x 125 feet, and plans the construction of a 2-story plant there.

PHILADELPHIA—International Harvester Co., 606 South Michigan avenue, Chicago, has awarded the general contract for the construction of a sales, service and garage building to be built here to Stofflet & Tillotson, Philadelphia. (Noted Feb. 14.)

West Central

KANSAS CITY, KANS.—City plans the construction of a municipal electric light plant. A. L. Mullergren, Board of Trade building, Kansas City, Mo., is engineer.

WICHITA, KANS.—Travel Air Inc., Walter Beach president, has awarded the general contract for the construction of the fourth unit of an airplane manufacturing plant, 1-story, to H. W. Underhill Construction Co., 235 North Waco street.

WINONA, MINN.—Board of public works, O. Leicht president, plans the construction of an electric pumping station.

ST. LOUIS—Guardian Aircraft Co., Richard F. Hardin chief engineer, has leased space in the old Koken plant where it will manufacture a special type of airplane.

ST. LOUIS—Missouri Pacific railroad, Missouri Pacific building, W. A. Hopkins, purchasing agent, is inquiring for a 42-inch band rip saw and resawing machine, a four-sided molding machine and a swing cut-off saw.

ST. LOUIS—Metalcraft Corp., S. C. McCluney, 5101 Penrose avenue, president, has awarded the contract for the construction of a metal toy manufacturing plant to Schooley & Chambliss, 6038 Delmar street.

GRAND ISLAND NEBR.—Bids are due March 4 on the construction of a 2-story power plant alteration and addition for the city of Grand Island. C. W. Burdick is manager of the city water and light department. (Noted Feb. 7.)

COLERIDGE, NEBR.—City of Coleridge plans the construction of a pumping plant in connection with a sewerage development project. Henningson Engineering Co., 326 Union State Bank building, Omaha, is engineer.

McCOOK, NEBR.—City of McCook, J. A. Lawritson mayor, contemplates the construction of a municipal light and power plant.

OMAHA, NEBR.—Structural steel for additions and alterations to the boiler house of Swift & Co., has been awarded to Paxton & Vierling Iron Works.

Southern States

BESSEMER, ALA.—Pullman Car & Mfg. Corp. has awarded the contract for structural steel for its car plant to Ingalls Iron Works, through United Engineers & Contractors. (Noted Feb. 14.)

GADSDEN, ALA.—Contract for the construction of the first unit of the Goodyear Tire & Rubber Co.'s plant to be built here has been awarded to A. K. Adams & Co., 542 Plum street northwest, Atlanta, Ga. (Noted Feb. 14.)

DAYTONA BEACH, FLA.—City has leased a 90-acre tract immediately south of the city to be an airport. A hangar, shops and other improvements will be erected.

ORLANDO, FLA.—Stutz-Bellanca Airplane

(*Continued on Page* 635)

Machinery

General Electric Continues to Inquire—Crane Demand Enlivened by Unusual Lists—Railroads Buying Well

PLACING of scattered machines and further inquiries from General Electric Co. continues to aid the market in the East and activity of several railroads gives strength in the West. Buying seems to be equal to that of January in some instances and above that level in others. General manufacturing companies are doing most of the buying, jobbing machine shops not being active in the market. The overhead crane market is given an uplift by requirements of the new steel foundry at Eddystone, Pa., which is expected to buy additional cranes. The Byers plant at Ambridge, Pa., is offering an outlet for heavy equipment. Studebaker Corp. is the only important buyer among automotive machine tool users.

New York, Feb. 26.—General Electric Co., Schenectady, N. Y., continues a leading buyer of machine tools. In addition to the award of a number of scattered orders, this company has also brought out further substantial inquiries. While few large lists are noted otherwise, a good volume of miscellaneous demand is noted, with the month now closing highly active for most sellers.

An improvement is noted in the overhead crane market, with at least two lists tentatively closed and two more expected to be awarded within the next fortnight. The latter include the list of 14 for General Steel Casting Co., Eddystone, Pa., which is expected to bring out further crane inquiries a little later.

The navy department will close bids March 12 on a double horizontal punch and bending machine.

Chicago, Feb. 26.—While the week was only moderately heavy in sales volume of machine tools, business was sufficient to help bring the total for the month to a high point. Some houses expect to have a volume of business equivalent to January and others report increases of 5 to 10 per cent. Most dealers also will have a good carryover of orders into next month. Additional inquiries have come out from the Rock Island and the Santa Fe since a week ago. Rock Island is inquiring for a double-end punch and shear, and Santa Fe is asking bids on a 20-inch lathe. A Milwaukee road machinery builder is expected to revive an important inquiry list for this year. That company has just awarded a horizontal drill and boring machine and other equipment in this district. The inquiry of Studebaker Corp., South Bend, Ind., will amount to about $35,000, it is stated. Current orders are not active among jobbing and contract machine shops, but most of the business represents single tool business from general manufacturing lines.

Worcester, Mass., Feb. 26.—Machine tool buying continues brisk and well distributed. Several producers of production tools are sold up for several months. Delivery is a problem with these firms and prices for a number of lighter units are inclined to harden. Sales of two or three units per order have been numerous during the week. Delivery is an important factor in placing orders for new automobile machinery. A maker of heavier machinery is working extra shifts and added to its volume this week. Small tools are active and stocks in consumers' hands are small. Used tools are selling better, but these must as a rule be of the best type.

Pittsburgh, Feb. 26.—Machine tool sales hold in fair volume although new inquiry is at the slower rate noted a short time ago and slightly below expectations. The A. M. Byers Co. has been in the heavy machinery market for equipment for its new plant at Ambridge, Pa. The Morgan Engineering Co. has received an order for a universal skelp mill, and a contract for a 40-inch blooming mill has been placed with the United Engineering & Foundry Co. The Westinghouse Electric & Mfg. Co. is placing a few tools at a time against its first quarter list.

Cleveland, Feb. 26.—Hupp Motor Car Corp., Detroit, recently bought 13 crankpin grinders, 12 crankshaft lathes, two lapping machines and 10 line bearing grinders for installation at its Fostoria, O., division. Machine tool purchases generally are confined to single items and in the aggregate make a pleasing volume. Immediate shipment still is desired by customers purchasing used equipment. The Nicholson Terminal & Dock Co., Detroit has placed two 25-ton gantry-type cranes with the Browning Crane Co., Cleveland, for installation at its River Rouge, Mich., docks.

CRANE ORDERS PLACED

Eight electric cranes for Bethlehem Steel Co., to Morgan Engineering Co., six of 10-ton capacity, 84-foot span and two 10-ton capacity, 106-foot span.

Three crawler cranes for T. A. Gillespie Co., New York, to Northwest Engineering Co.

Two 25-ton gantry cranes for Nicholson Terminal & Dock Co., Detroit, to Browning Crane Co.

Single orders include: 15-ton Thew crawler crane, either new or used, for Corlite Corp., New York, placed; wide gage locomotive crane, equipped to handle a 3-yard load on a 90-foot boom, for Hercules Portland Cement Co., Hercules, Pa., to Orton Crane & Shovel Co.; crawler crane for Triest Construction Co., New York, to Koehring Mfg. Co.; 3-ton tractor crane for Triest Construction Co., New York, to Otis Engine Co.; 1-ton tractor crane for Commonwealth Dominion Steamship Line, New York, to Otis Engine Co.; 10-ton electric traveling crane for Northern Paper Mills Inc., Green Bay, Wis., to Northern Engineering Works, Detroit.

CRANE ORDERS PENDING

Fourteen electric overhead cranes for General Steel Casting Co., Eddystone, Pa., action expected within next two weeks; as previously noted, this list comprises five 75-ton, four 40-ton, four 25-ton and one 10-ton crane; a substantial list of charging cranes and small gantries is expected out later.

Six electric overhead cranes for Chase Brass Co., Waterbury Conn., award expected this week

Auto Production Sets January Record

Washington, Feb. 26.—Production of automobiles in the United States in January totaled 402,154 passenger cars and trucks and set a new record for that month, according to statistics of the department of commerce. The previous January record was in 1924 with a total of 318,526 cars and trucks. Canadian production in January also was reasonably high. Monthly comparisons follow:

	United States			†Canada
1928	Total	Passenger cars	Trucks	Total
Jan.	231,728	205,646	26,082	8,463
Feb.	323,796	291,151	32,645	12,504
March	*413,314	371,821	*41,493	17,469
April	410,104	364,877	45,227	24,211
May	425,783	375,863	49,920	33,942
June	396,796	356,622	40,174	28,399
July	*392,086	338,792	*53,294	25,226
Aug.	461,298	400,593	60,705	31,245
Sept.	*415,293	358,872	*56,421	21,193
Oct.	*397,112	339,976	*57,136	18,536
Nov.	*256,933	*317,254	*39,679	11,769
Dec.	*233,907	*205,793	27,991	9,425
Year	4,358,150	*3,827,260	*530,890	242,382
1929				
Jan.	402,154	350,617	51,537	21,501

†Reported by dominion bureau of statistics.
*Revised.

Production High in South

Birmingham, Ala., Feb. 26.—Eighteen open hearth steel furnaces are active in this district. Additional sheet mills have been bought in the past few days. Plans of the Tennessee Coal, Iron & Railroad Co. for a second unit at the sheet mill at Fairfield and of the Gulf States Steel Co. for a combination plate-sheet mill at Gadsden are well in hand. The Pullman Car & Mfg. Corp. expects to get its Fairfield carbuilding works in operation by March 8.

Valve Makers Are Busy

Worcester, Mass., Feb. 26.—Makers of valves and valve equipment in western Massachusetts have booked heavy orders and in some cases are operating an extra day and night turn. With the passage of the cruiser bill in congress, additional business is forecast.

Construction and Enterprise

(Continued from Page 633)

Co., Harry C. Stutz, president, has been organized for the manufacture of large and small planes. The construction of an assembly plant here is planned.

PERRY, FLA.—Taylor county board, of public instruction, E. L. Cox chairman, Perry, plans the construction of a heating plant.

TALLAHASSEE, FLA.—Work has been started on the municipal airport here. Grading and filling will soon be completed and this will be followed by the construction of airport facilities.

COLUMBUS, GA.—City commission plans the construction of an airport.

DECATUR, GA.—Agnes Scott college, J. R. McCain president, plans the construction of a 1½-story heating plant and laundry, 40 x 50 feet. Two vertical tube heating boilers will be installed.

THOMASTON, GA.—B. F. Goodrich Rubber Co., Akron, O., soon will award the contract for the construction of a boiler plant, 40 x 70 feet, part of a construction project here.

BURKESVILLE, KY.—Cumberland Public Service Co. plans the installation of additional equipment in its electric and ice plant. Contract has been let to Fairbanks, Morse & Co., Louisville, Ky., for an alternator, an engine and a generator.

SHREVEPORT, LA.—Harry E. Oliver and associates have organized the Creola Carbon & Gasoline Co. to build a combination carbon black and gasoline plant on properties in Richland Parish, La., near Mangham.

BLACKSBURG, S. C.—Southern Public Utilities, Charlotte, N. C., plans improvements to the local light and power plant.

COLUMBIA, S. C.—Richland Power Co., O. Y. Owings Jr., secretary-treasurer, 1002 Elmwood street, plans the construction of a hydroelectric project on Saluda river a mile from the city.

AUSTIN, TEX.—City of Austin, Adam R. Johnson, manager, plans improvements at its airport, including lighting and other equipment.

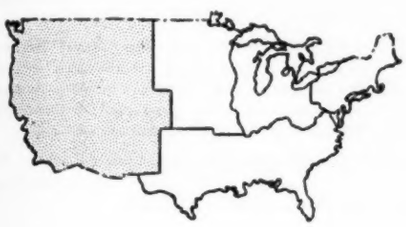
DALLAS, TEX.—Associated Factories Corp. has been formed to manufacture a machine for removal of cotton lint from seed after ginning. John Spellman, Magnolia building, is vice president.

HOUSTON, TEX.—Dixie Neon Sign Co., A. C. Bering manager, has leased building at McGowan and Brazos streets for manufacture of electrical signs.

HOUSTON, TEX.—John E. Mays and George H. Young have secured lease on building at 1817 Main street, 50 x 125 feet, and plan manufacture of electrical sign equipment.

HOPEWELL, VA.—Hopewell Sheet Metal Works has let the contract for a building to C. D. Hughes.

RENTON, WASH.—Puget Sound Power & Light Co. has started work on the power plant being constructed here. (Noted Dec. 6.)



Western States

LOS ANGELES—City of Los Angeles has awarded the general contract for the construction of a pumping plant in connection with a sewerage development, to Carpenter Bros., 457 North Canyon drive, Beverly Hills.

OAKLAND, CALIF.—City plans to remodel its yard buildings for machine shops, carpenter shops, etc.

SAN FRANCISCO—Coast Counties Gas & Electric Co., Russ building, plans extensions and improvements to gas mains and electric systems in Santa Cruz, Watsonville, Gilroy, Hollister and Pittsburg.

STOCKTON, CALIF.—Fraser Gas Furnace Co., 445 South San Joaquin street, plans the construction of a 1-story plant on Fremont street. R. P. Morrell, Mall building, is architect.

DENVER—City of Denver received bids for the constuction of an airplane hangar, 120 x 121 feet with a building 21 x 120 feet at the rear, to be used for machine shop, etc.

Canada

CALGARY, ALTA.—Precision Machine & Foundry Co. will start work in the spring on the erection of a foundry here. Foundry equipment and tools will be purchased.

STETTLER, ALTA.—The town council has awarded a contract to the Nelson River Construction Co., 607 Union Trust building, Winnipeg, Man., for construction of a sewage disposal plant here. Equipment is to be purchased later. Engineers are Haddin & Milns Ltd., 208 Oddfellows building, Calgary, Alta.

GEORGETOWN, ONT.—Smith & Stone are having plans prepared by Kaplan & Sprachmen, Toronto, Ont., for a plant addition here.

NORTH BAY, ONT.—James, Proctor & Redfern Ltd., Toronto, Ont., are preparing plans for a waterworks plant here. Tenders for building and equipment are to be called so soon as plans are completed.

PRESTON, ONT.—C. M. Iredale, 420 William street, proposes to build a 2-story plant on Montrose street here.

TORONTO, ONT.—Plans have been prepared and bids will be called immediately for the erection of a factory on Dufferin street and Geary avenue for the Prest-O-Lite Storage Battery Co. Ltd., to be 2-story, 80 x 300 feet.

TORONTO, ONT.—Canadian Elevator Equipment Co., 94 Sherbourne street, has appointed Ross & MacDonald, 1 Belmont street, Montreal, Que., architects, to prepare plans for a plant to be erected on Eastern avenue and Heward street, here.

WALKERVILLE, ONT.—Walkerville Hydro-Electric commission, 102 Wyandotte street, proposes to build a substation on Ypres road, here.

Recent Incorporations

CHICAGO—Superior Bearings Co., 8 South Dearborn street, has been incorporated with $15,000 capital to manufacture and deal in bearings by Harry A. Badger.

CHICAGO—Vending Products Co., 120 South LaSalle street, has been incorporated to manufacture and deal in vending machines, etc., by Mortimer A. Rothstein.

CHICAGO—Kwick Print Co., 564 West Monroe street, has been incorporated with $40,000 capital to manufacture and deal in printing, stamping and embossing machines, by Olaf Halverson, S. F. Keisling and O. H. Johansen.

AURORA, IND.—G. A. Schipper Co. has been incorporated with $20,000 in preferred shares and 3000 shares no par value stock to manufacture and deal in metal and woodworking machinery, apparatus, etc., by George A. Schipper.

INDIANAPOLIS—Atlas Pattern & Machine Co. has been incorporated with $10,000 capital to manufacture machinery and patterns by John B. and William P. Holmes.

TERRE HAUTE, IND.—B. F. Crawford Co. has been incorporated with $20,000 capital to manufacture and deal in machinery and industrial equipment, by Benjamin F. Crawford.

BEVERLY, MASS.—Whitcomb Carter Co. has been incorporated with $50,000 capital to manufacture tools of all kinds, hardware, etc., by Willis C. Whitcomb, 184 Cabot street.

BOSTON—Thompson Mfg. Co. Inc. has been incorporated with 1000 shares no par value stock to manufacture machinery, devices, equipment, etc., by Wilfred E. Tait, 99 Pickney street.

BOSTON—Royal Protector Co. has been incorporated with $10,000 capital to manufacture heating and plumbing supplies and accessories by Royal Sterling, 1315 Commonwealth avenue.

BOSTON—Diesel Marine Equipment Co. has been incorporated with 500 shares no par value stock to manufacture and deal in tools, parts, and apparatus, by Theron R. Kelley, 415 High-

land street, Newton, Mass.

BROCKTON, MASS.—Teplow Automatic Heat & Cold Co. Inc. has been incorporated with $50,000 capital to manufacture and install heating equipment, refrigeration, etc., by Isaac D. Teplow, 209 Highland street.

CAMBRIDGE, MASS.—Coffin Motor Co. Inc. has been incorporated with $100,000 capital to manufacture motor vehicles of all kinds by Arthur G. Coffin, Arlington street.

CAMBRIDGE, MASS.—Frank E. Cassidy Inc. has been incorporated with $25,000 capital to manufacture plumbing and heating supplies, etc., by Frank E. Cassidy, 146 Brooks street, Arlington, Mass.

HANOVER, MASS.—Gillette Mfg. Co. has been incorporated with $20,000 in preferred shares and 300 shares no par value stock to manufacture parts, and appliances for automobiles, valves, bearings, etc., by George K. Gillette Jr., South Hanover, Mass.

HUDSON, MASS.—Overhead Door Co. has been incorporated with 1440 shares no par value stock to manufacture fire doors, by George F. Matthews, 7 High street.

MALDEN, MASS.—Service Parts Co. Inc. has been incorporated with $50,000 capital to manufacture automobile parts and accessories, by William G. Bryant, 1772 Columbia road, Boston.

MELROSE, MASS—Cheney Co. has been incorporated with $75,000 in preferred shares and 2500 shares no par value stock to manufacture flashings, metal work, etc., by Allan Cheney, 317 Grove street.

MILFORD, MASS.—Stake-Tite Co. has been incorporated with $20,000 in preferred shares and 800 shares no par value stock to manufacture and deal in vehicle bodies, stake holders, and other metal products, by Philip Cenderella, 68 School street.

DETROIT—R. & M. Mfg. Co., 5680 Twelfth street, has been incorporated with $25,000 capital to manufacture and deal in tools, gages, etc., by John K. Murray.

DETROIT—Michigan Valve & Foundry Co., 3631 Parkinson avenue, has been incorporated with 5000 shares no par value stock to engage in a general foundry and metal manufacturing business by Willard F. Rockwell.

JACKSON, MICH.—Wolverine Carburetor Co., 1930 Cooper street, has been incorporated with 50,000 shares no par value stock to manufacture and deal in automotive devices, parts and accessories, by Warren W. Mitchell, Clark B. Potter and Ben H. Wilson.

TRENTON, N. J.—New Jersey Auto Radiator Co. has been incorporated with $125,000 capital to manufacture auto radiators by Harvey T. Satterthwaite, Trenton, attorney.

NEWARK, N. J.—American Radiator Enclosure Corp. has been incorporated with $125,000 capital to manufacture radiator enclosures by Fred Scherer, attorney.

NEW YORK—Centrifex Mfg. Co. has been incorporated with $100,000 capital to manufacture and deal in machinery, etc., by Graves & Yawger, 20 Pine street, attorneys.

NEW YORK—Limitorque Corp. has been incorporated with 200 shares no par value stock to manufacture and deal in power mechanisms by Goldmark, Bennett & Colin, 74 Broadway, attorneys.

HENRYETTA, OKLA.—General Zinc Smelting Corp. has been incorporated with $500,000 capital by George W. Moore, Webb City, Mo.; O. A. Aesterle, Henryetta, Okla., and C. S. Blanchard, Joplin, Mo.

ALLENTOWN, PA.—Thermco-System Inc. has been incorporated with $10,000 captial to manufacture and deal in forced draft combustion equipment, ventilating equipment, etc., by Raymond M. Miller, 1125 North Twenty-first street.

CHARLEROI, PA.—Bimetallic Products Co. has been incorporated with 1500 shares no par value stock to manufacture and deal in iron and steel products, etc., by J. F. Newman, 1035 Fulton building, Pittsburgh.

CONSHOHOCKEN, PA.—Conshohocken Foundry Co. has been incorporated with $50,000 capital to engage in general foundry and machine shop business by Edward T. Child, Larchmont, N. Y.

ERIE, PA.—Erie Hydraulic Mfg. Co. has been incorporated with $75,000 capital to manufacture all kinds of machinery and specialties, by Addison L. Reynolds, 632 Liberty street.

HARRISBURG, PA.—Standard Tractors Inc. has been incorporated with 5000 shares no par value stock to manufacture and deal in farm implements, machinery, etc., by Ralph L. Miller, 121 Conoy street.

PHILADELPHIA—Earle G. Boyer Inc. has been incorporated with $25,000 capital to manufacture and deal in machinery, apparatus, etc., by William H. Rittenhouse, 4133 North Ninth street.

PHILADELPHIA—E. J. McAleer & Co. Inc. have been incorporated with $285,000 capital and 1000 shares no par value stock to manufacture and deal in tinware, metalware, etc., by Eugene McAleer, 5133 North Sixteenth street.

PHILADELPHIA — Philadelphia Smelting Works Inc. has been incorporated with $10,000 capital to manufacture and deal in metals and metal products, by Samuel Rubin, 4957 Gransback street.

PHILADELPHIA—Philadelphia Combustioneer Corp. has been incorporated with $25,000 capital to manufacture, deal in and install heating and plumbing apparatus, equipment, etc., by D. L. Bird, 5322 Diamond street.

PITTSBURGH—Standard Steel Propeller Corp. has been incorporated to manufacture and deal in airplanes, parts, machinery, etc., by Robert W. Eiler, 5636 Callowhill street.

READING, PA.—Window Sash Device & Hardware Co. has been incorporated with $40,000 capital to manufacture window sash devices, hardware, and other products, by Constantinos Sofianos, 115½ South Tenth street.

MANITOWOC, WIS.—Invincible Air Craft Corp. has been incorporated with $500,000 capital to manufacture airplanes.

New Trade Publications

GEARS—Ohio Gear Co., Cleveland, formerly the Machine Products Co., has issued a catalog of its stock gears, roller chain and sprockets, pulleys and speed reducers.

THREAD GAGE—Jones & Lamson Machine Co., Springfield, Vt., has issued a bulletin describing a gage to be used in measuring error in screw threads.

HYDRAULIC PRESS—Hydraulic Press Mfg. Co., Mt. Gilead, O., in the current number of its house organ gives views of various uses of its presses. Its purpose is to show the variety of industries that are served by its presses.

HOISTS—Curtis Pneumatic Machinery Co., St. Louis, in a current bulletin gives data on the performance of hoists, cranes, trolleys and air compressors in various industries. The booklet contains many illustrations from photographs of typical installations.

FUEL HANDLING—Semet-Solvay Engineering Corp., New York, illustrates in a current bulletin a fuel handling system built for a New England gas company. A diagram and description of the various important features cover the installation.

ALUMINUM ALLOYS—Sheet Aluminum Corp., Jackson, Mich., is distributing a booklet on its metal known as hyb-lum, an aluminum alloy containing nickel and metals of the chromium group. Its physical properties are given and the metal is described as to its various characteristics.

LUBRICATION—The Texas Co., New York, in its current publication in the series on lubrication covers the problems of lubrication in woodworking machinery. Illustrations show the application of lubricants to this class of machinery.

BRONZE—To show the lasting qualities of bronze the Taunton-New Bedford Copper Co., division of the Republic Brass Corp., Taunton, Mass., has issued a leaflet illustrated by ancient Grecian bronze objects made in the first to fifth century B. C. and in fine preservation. These are taken as a text to describe the qualities of bronze as a metal for endurance.

FIREPROOF ROOFING—Structural Gypsum Corp., Akron, N. Y., has issued a bulletin on its precast fireproof roofs for industrial buildings. Illustrations show methods of application. Tables show total safe loads, saving in fuel consumption and blueprints give details of construction, eave and gable details and roof plans.

SAND BLAST NOZZLES—Direct Separator Co., Syracuse, N. Y., has published a 12-page booklet giving information on its sand blast nozzles. The booklet contains illustrations of the nozzles, both assembled and disassembled. It also gives tables showing operation data, a partial list of users and illustrations and specifications of both vertical and horizontal divide air separators.

HARDNESS TESTERS—Wilson-Maeulen Co., 383 Concord avenue, New York, has issued a catalog on its Rockwell hardness tester. The booklet describes and illustrates the machine in detail and gives some of its uses. A list of prices and spare parts and a list of some of the users of this equipment both in the United States and abroad also is given.

TUYERES—A tuyere with double compartment and independent circulation is featured in a bulletin by the William M. Bailey Co., Pittsburgh. Cross sections illustrate construction and operation. A feature is that circulation can be maintained in the butt section after the nose section has been burned through, water being disconnected from the latter.

UNIT HEATERS—A bulletin has been published by L. J. Wing Mfg. Co., 154 West Fourteenth street, New York, on its unit heater. The history and development of unit heating are outlined, with the essentials necessary for good factory heating and this company's method of meeting them. The bulletin contains description, engineering data and information, with photographic illustrations of installations in various types of buildings.

Wherever Wheels and Shafts Turn

The swift strides made by Timken through long research and large resources have placed Timken Bearings in the forefront of the economics of a mechanical age.

Daily new uses are found, new applications, new advantages, and daily Timken sweeps to new peaks.

At every turn—in industry, transportation, mining and agriculture—Timken Bearings are at work in railroad and street car journals, motor cars, buses, trucks and machinery of all kinds, opposing friction with anti-friction, waste with saving.

Wherever power is applied through moving parts, Timken Bearings are bettering the work of the world—holding friction in check, carrying radial and thrust loads, resisting wear, cutting production costs and increasing production wherever wheels and shafts turn. "Timken-Equipped" is an important guide for any machinery buyer to follow.

THE TIMKEN ROLLER BEARING CO., CANTON, OHIO

TIMKEN

Tapered

ROLLER BEARINGS

Pipe and Tube Prices—Plate Extras

Steel Pipe

Pittsburgh and Lorain basing discounts, jobber's carloads.

Evanston, Ill., and Indiana Harbor, Ind., take differential 2 points less discount.

Chicago takes differential 2½ points less than Pittsburgh-Lorain basis.

Butt Weld

	Black	Galvanized
⅛-inch	45	19½
¼ and ⅜-inch	51	25½
½-inch	56	42½
¾-inch	60	48½
1 to 3-inch	62	50½
Lap Weld		
2-inch	55	43½
2½ to 6-inch	59	47½
7 to 8-inch	56	43½
9 and 10-inch	54	41½
11 and 12-inch	53	40½

REAMED AND DRIFTED

Butt Weld		
1 to 3-inch	60	48½
Lap Weld		
2-inch	53	41½
2½ to 6-inch	57	45½

EXTRA STRONG—PLAIN ENDS

Butt Weld		
⅛-inch	41	24½
¼ and ⅜-inch	47	30½
½-inch	53	42½
¾-inch	58	47½
1 to 1½-inch	60	49½
2 to 3-inch	61	50½
Lap Weld		
2-inch	53	42½
2½ to 4-inch	57	46½
4½ to 6-inch	56	45½
7 to 8-inch	52	39½
9 and 10-inch	45	32½
11 and 12-inch	44	31½

DOUBLE EXTRA STRONG

Butt Weld		
½-inch	42	32½
¾ to 1½-inch	45	35½
2 to 2½-inch	47	37½
Lap Weld		
2-inch	41	32½
2½ to 4-inch	43	34½
4½ to 6-inch	42	33½
7 to 8-inch	38	25½

(Note—Large jobbers obtain additional preferential discounts of 1 and 5 on black and 1½ and 5 on galvanized. Extra 5 per cent granted in the 4th quarter 1927 and 1st quarter 1928 discontinued April 2, 1928.)

Wrought Iron Pipe

Pittsburgh basing discounts, jobbers' carloads. Individual quotations made on delivered basis.

THREADS AND COUPLING

	Black	Galv.
Butt Weld		
¼ and ⅜-inch	+11	+36
½-inch	23	5
¾-inch	28	11
1 and 1¼-inch	31	15
1½ and 2-inch	35	18
Lap Weld		
1¼ and 1½-inch	Upon application	
2-inch	23	9
2½ to 3½-inch	28	12
4 to 6-inch	30	17
7 and 8-inch	29	16
9 to 12-inch	26	11

REAMED AND DRIFTED

2-inch to 6-inch—Two points less than above

EXTRA STRONG, PLAIN ENDS

¼ and ⅜-inch	+13	+48
½-inch	23	7
¾-inch	28	12
1 to 2-inch	34	18
Lap Weld		
2-inch	29	13
2½ to 4-inch	34	20
4½ to 6-inch	33	19
7 and 8-inch	31	17
9 to 12-inch	21	8

DOUBLE EXTRA STRONG

Butt Weld		
½-inch	+47½	+59½
¾-inch	+28	+40
1-inch	+34	+46
1¼-inch	+28	+40
1½-inch	+27	+39
Lap Weld		
2 and 2½-inch	+13	+25
3 and 4-inch	+ 8	+17
4½ to 6-inch	+ 9	+18
8-inch	+12	.....

(Note—Large jobbers obtain additional preferential discounts of 1, 5 and 2½ on black and galvanized.)

Boiler Tubes

Pittsburgh carload discounts

STEEL (Lap Weld)

2 and 2¼-inch	40 off
2½ and 2¾-inch	48 off
3-inch	54 off
3¼ to 3¾-inch	56 off
4-inch	59 off
4½ to 6-inch	48 off

Subject to two 5 per cent discounts on full carload shipments. On less than 10,000 pounds, base discount reduced 6 points and one 5 per cent allowed. On 10,000 pounds to carload, base discount reduced 4 points and two 5 per cents allowed.

CHARCOAL IRON

1½-inch	1 off
1¾-inch	8 off
2 and 2¼-inch	13 off
2½ and 2¾-inch	16 off
3-inch	17 off
3¼ to 3½-inch	18 off
4-inch	20 off
4½-inch	21 off

Subject to 10 per cent discount on full carload lots. On less than 10,000 pounds, base discount reduced 2 points and no preferential allowed. On 10,000 pounds to carload, 5 per cent preferential allowed.

SEAMLESS COLD DRAWN

1-inch	63 off
1¼ and 1½-inch	55 off
1¾-inch	39 off
2 and 2¼-inch	34 off
2½ and 2¾-inch	42 off
3-inch	48 off
3¼ and 3½-inch	50 off
4-inch	53 off
4½, 5 and 6-inch	42 off

SEAMLESS HOT ROLLED

1¾-inch	39 off
2 and 2¼-inch	40 off
2½ and 2¾-inch	48 off
3-inch	54 off
3¼ and 3½-inch	56 off
4-inch	59 off
4½, 5 and 6-inch	48 off

Subject to 5 per cent supplementary discount for carload lots. On less than 10,000 pounds, base discount reduced 6 points. On 10,000 pounds to carload, base discount reduced 4 points and one 5 per cent allowed.

SEAMLESS STEEL MERCHANT BOILER TUBES

Extras:

Add 5 per cent for lengths over 24 feet and not over 26 feet.

Smaller tubes than 1-inch and lighter than standard gage to be sold at mechanical tubing list and discount.

Intermediate sizes and gages not listed above take price of next larger outside diameter and heavier gage.

SEAMLESS STEEL MECHANICAL TUBING

Base Discounts on New List July 1, 1925

Carbon 0.10 to 0.30 per cent.....50 to 55 off
Carbon 0.30 to 0.40 per cent.....45 to 50 off

SEAMLESS STEEL LOCOMOTIVE AND SUPERHEATER TUBES

Outside diameter	Gage	Net prices per foot f.o.b. Pittsburgh Price
21-inch	12-gage	14¼c
2-inch	11-gage	15c
2-inch	10-gage	16c
2¼-inch	12-gage	16c
2¼-inch	11-gage	17c
2¼-inch	10-gage	18c
3-inch	7-gage	33c
5⅜-inch	9-gage	50c
5½-inch	9-gage	52c

Plus usual extras for forming and for long lengths over 18 feet and for commercially exact lengths.

Plate Extras

BASE

Rectangular plates, tank steel or conforming to manufacturers' Standard Specifications for structural steel, date Nov. 24, 1922, or equivalent, ¼-inch thick and over on thinnest edge (except for ¼-inch or 72 inches wide when ordered to weight in pounds per square foot—see width and gage extras), 100 inches wide and under, down to but not including 6 inches wide, 5 feet 0 inches long up to published limit in length but not over 80 feet 0 inch, are base. Extras per pound for width or diameter.

All Plates Rectangular or Otherwise

¼-inch thick and heavier, but not less than 11 pounds per square foot, if ordered to weight.

Over 100 to and including 110 inches	.05c
Over 110 to and including 115 inches	.10c
Over 115 to and including 120 inches	.15c
Over 120 to and including 125 inches	.25c
Over 125 to and including 128 inches	.50c
Plates less than ¼-inch or lighter than 11 pounds per square foot.	
Over 72 to and including 84 inches	.10c
Over 84 to and including 96 inches	.20c
Over 96 to and including 100 inches	.30c

Over 100 inches add .35c to width extras for plates ¼-inch thick and heavier.

GAGE

Plates Not Exceeding 72 Inches Wide

Plates less than ¼-inch gage, to and including $\frac{3}{16}$-inch; or lighter than 10.2 pounds per square foot, to and including 7.65 pounds square foot.....	.20c

Plates Over 72 Inches Wide

Plates less than ¼-inch gage, to and including $\frac{3}{16}$-inch; or lighter than 11 pounds per square foot, to but not including 7.65 pounds square foot....	.20c
Plates ordered 7.65 pounds square foot	.30c

QUALITIES

Pressing steel	.10c
Flange steel (boiler grade)	.15c
Ordinary firebox steel	.20c
Stillbottom steel	.30c
Locomotive firebox steel	.50c
Marine steel	1.50c
Hull materials subject to U. S. Navy Dept. specifications for medium or soft steel	.10c
High tensile hull steel subject to U. S. navy department or equivalent specifications	1.00c
Boiler steel subject to U. S. navy department specifications, classes A-B	1.50c

Hull plates to hull specifications, required to stand cold flanging, take extra for flange steel.

Floor Plates

Checkered plates 1.75c

Checkered plates are not furnished to sketch and are rolled from "Stock Steel" only. No physical tests will be made on checkered plates.

INSPECTION

Mill inspection .....No extra

Charges for other inspection, such as Lloyd's or American bureau of shipping, will be made by inspection bureau direct to buyer.

CUTTING

LENGTH OR DIAMETER

All Plates, Rectangular or Otherwise

Five feet and over up to published limit of length, but not over 80 feet	No extra
Under 5 feet to 3 feet inclusive	.10c
Under 3 feet to 2 feet inclusive	.25c
Under 2 feet to 1 foot inclusive	.50c
Under 1 foot	1.55c
Over 80 feet to 100 feet inclusive	.10c

Over 100 feet add .25c plus .05c for every additional 2 feet or fraction thereof.

Regular Sketches

With not more than four straight cuts. (Including straight taper plates)

Additional extra ..... .10c

Irregular Sketches

With not more than four straight cuts. (Sketches cannot be sheared with re-entrant angles)

Additional extra ..... .20c

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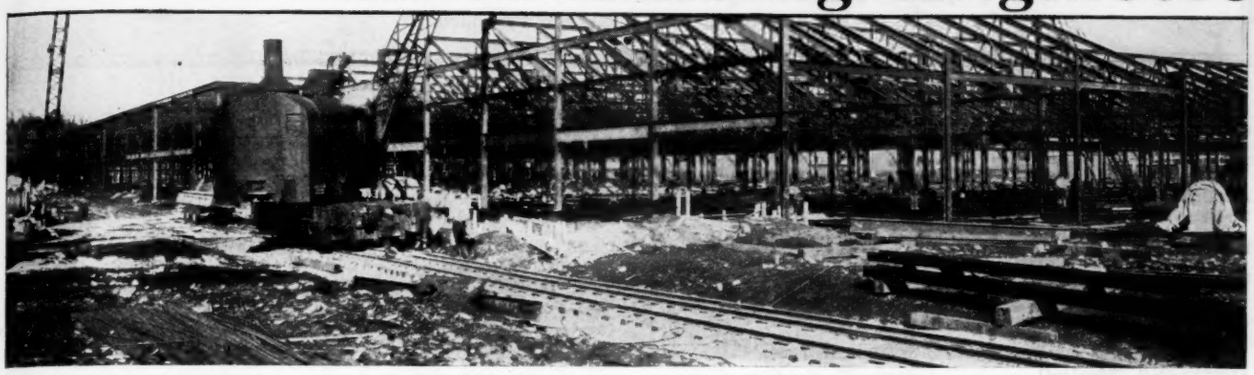

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